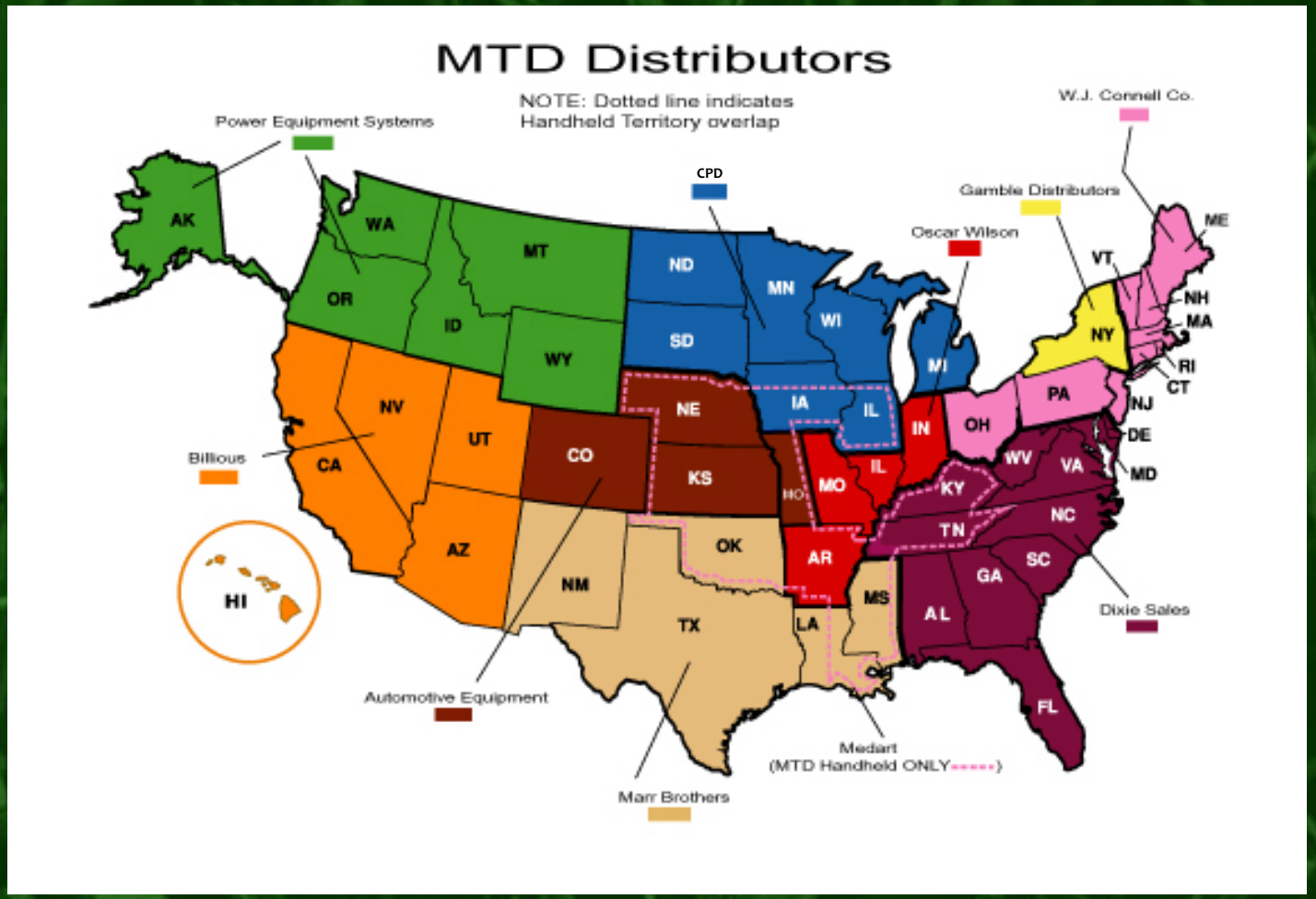
UPDATE

MTD Central Distributors

Map, Addresses, and Phone Numbers are on the CD-ROM



MTD For A Growing World.

Brand News

MTD makes some private branded equipment. We always have.

MTD makes some products under the Brand:

CRAFTSMAN®

Sears

Sold at various retailers.

Craftsman warranty will be handled though Sears.

Outside of warranty, MTD dealers are free to work on the Craftsman branded equipment on a customer–pay basis.

ACE® Hardware

Brand News

MTD does make some LX lawn tractors and GT garden tractors sold under the TORO brand.

Dealers are likely to recognize the basic tractor designs when they are brought in for service.

For warranty purposes, they are to be treated as TORO products. MTD is not involved.

Brand News

MURRAY

is a different situation.

Murray branded equipment made by MTD will be treated just like YardMan, YardMachine, TroyBilt, or Bolens.

Look for the MTD model and serial number tag.

Brand News

There is very little that is serviceable on Remington Electric Chainsaws. Parts that are available are mostly:

- Saw Chain
- Saw Bars
- Chain adjuster screws and pins
- Oil Caps

Brand News

REMINGTON®

Unusual Remington Service features:

- Saw Chain has unusual link counts
- Do not use bar and chain lube - fill the chain lube tank with motor oil

Warranty: There is very little to be done under warranty, but equipment that fails within the warranty period does need to be inspected.

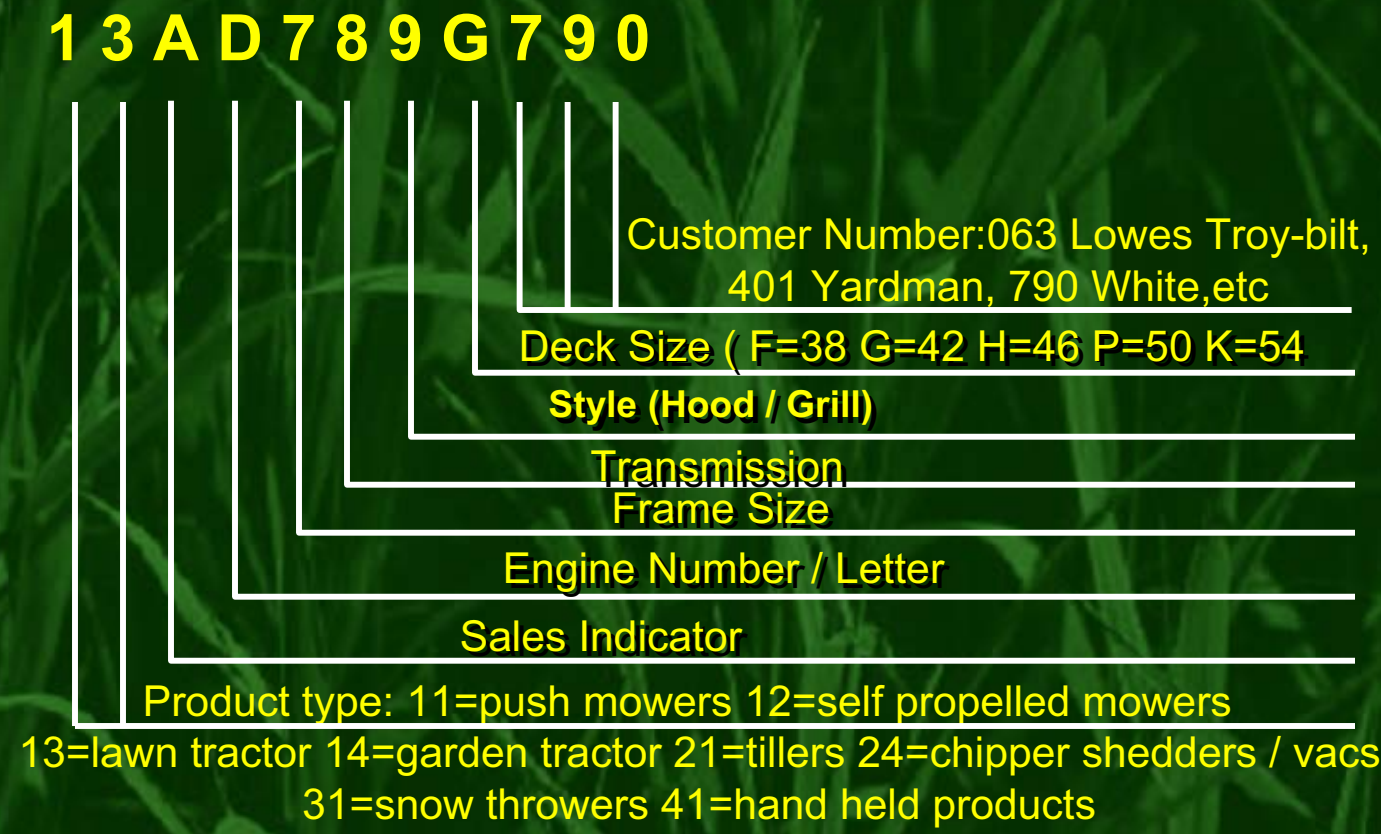
This is good for ½ hour diagnosis on the warranty claim.

Legal Disclaimer

On December 29, 2008, DHP Holdings II Corporation and its affiliates, including DESA Specialty LLC and DESA, LLC ("DESA"), filed a bankruptcy petition with the U.S. Bankruptcy Court for the District of Delaware, Case No. 08-13422 (MFW) (Jointly Administered). Effective as of May 15, 2009, MTD Southwest Inc ("MTD") purchased certain assets of DESA, including "Remington" trademarks for certain outdoor lawn and garden power equipment. MTD did not assume any liabilities or warranty obligations of DESA, including, but not limited to: (i) liabilities arising from any products sold by DESA including Remington branded outdoor power equipment products, (ii) liabilities for product liability claims for any products sold by DESA including Remington branded outdoor power equipment products and/or (iii) any other claims which consumers, suppliers and/or other creditors, may have against DESA. For further information, please contact the U.S. Bankruptcy Court for the District of Delaware, (302) 252-2900, *www.deb.uscourts.gov*.

UPDATE

2005 Model Numbering System


1 3 A D 7 8 9 G 7 9 0
Customer Number:063 Lowes Troy-bilt,
401 Yardman, 790 White,etc
Deck Size (F=38 G=42 H=46 P=50 K=54
Style (Hood / Grill)
Transmission
Frame Size
Engine Number / Letter
Sales Indicator
Product type: 11=push mowers 12=self propelled mowers
13=lawn tractor 14=garden tractor 21=tillers 24=chipper shedders / vacs
31=snow throwers 41=hand held products

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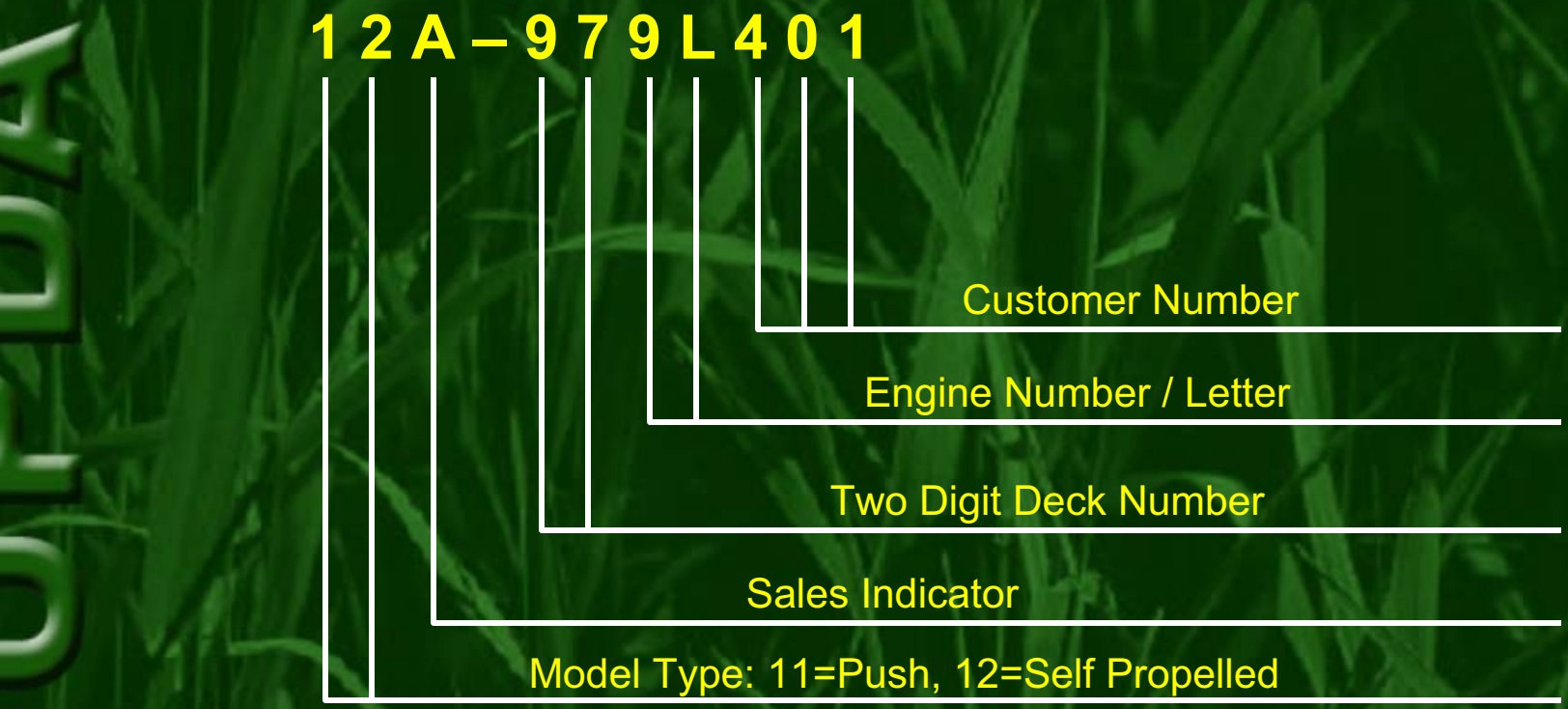
2005 Walk Behinds

UPDATE


1 2 A – 9 7 9 L 4 0 1
Customer Number
Engine Number / Letter
Two Digit Deck Number
Sales Indicator
Model Type: 11=Push, 12=Self Propelled

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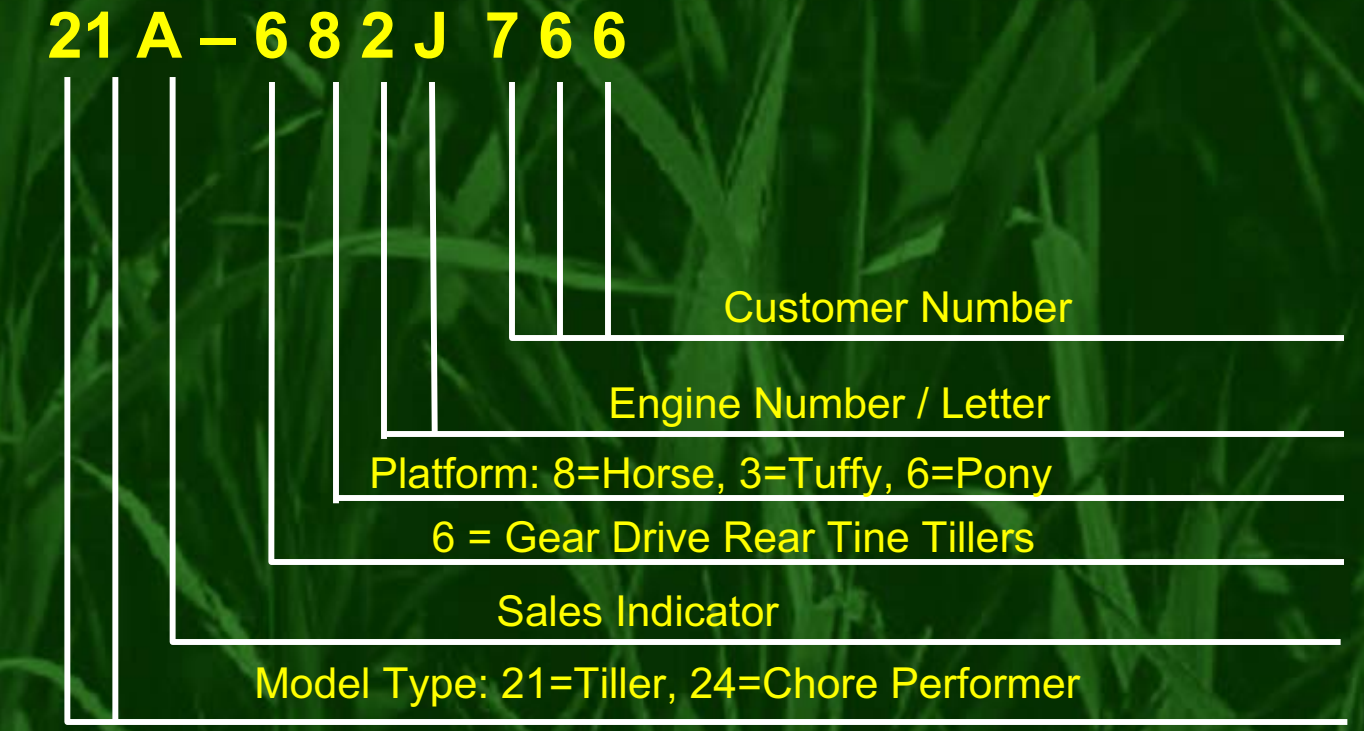
UPDATE

2005 Tillers / Chore Performers
Example: Troy-Bilt


21 A – 6 8 2 J 7 6 6
Customer Number
Engine Number / Letter
Platform: 8=Horse, 3=Tuffy, 6=Pony
6 = Gear Drive Rear Tine Tillers
Sales Indicator
Model Type: 21=Tiller, 24=Chore Performer

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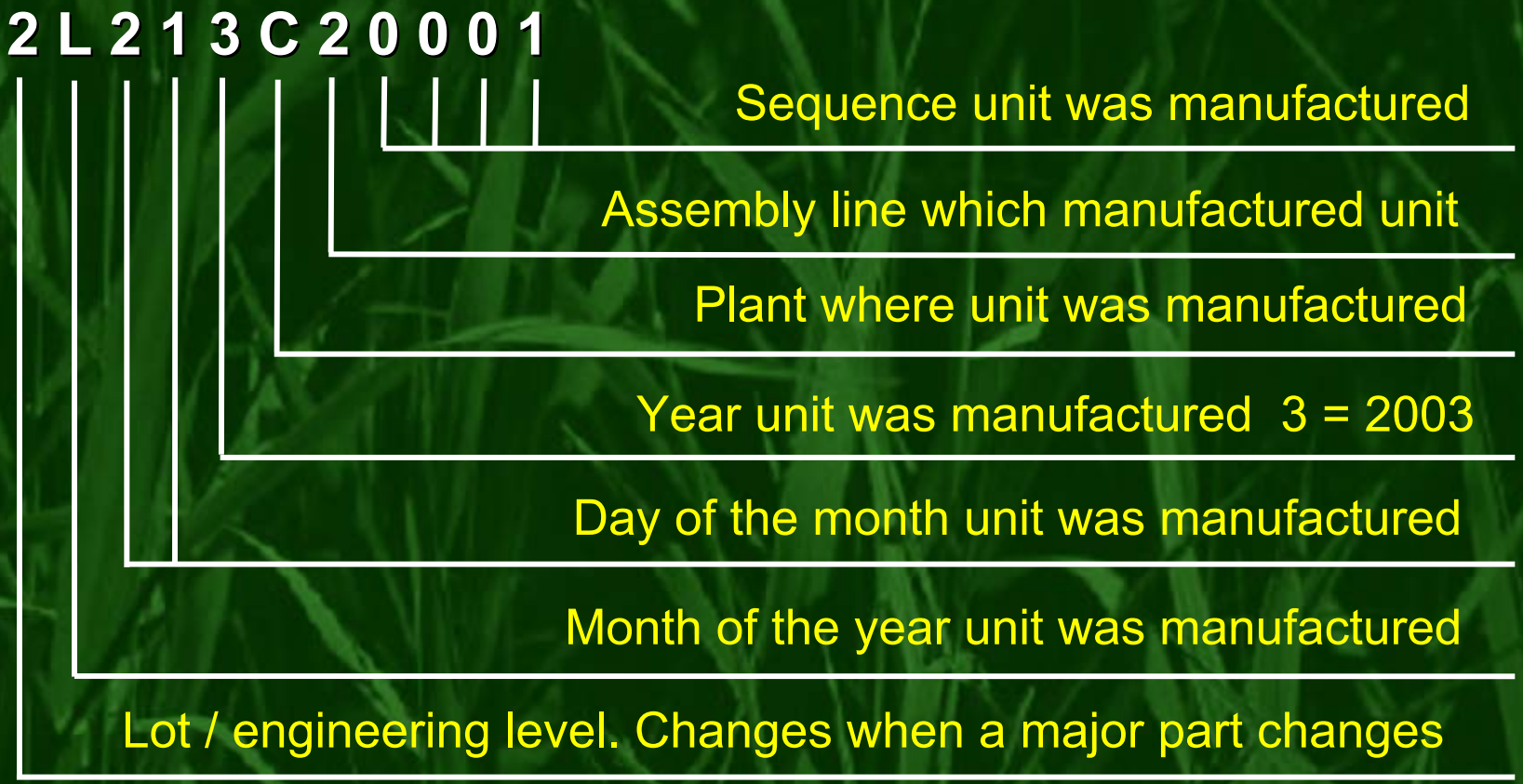
Current Serial Numbers

UPDATE


2 L 2 1 3 C 2 0 0 0 1
Sequence unit was manufactured
Assembly line which manufactured unit
Plant where unit was manufactured
Year unit was manufactured 3 = 2003
Day of the month unit was manufactured
Month of the year unit was manufactured
Lot / engineering level. Changes when a major part changes

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UPDATE

Hand-Held Warranty Exchange Policy

Under MTD's handheld warranty, all customers are to obtain inspection and service from authorized servicing center. If a dealer determines that any of the following conditions exceed 75% of the purchase price, then replacement of the product is necessary.

If a dealer determines the cost of parts will exceed 75%

If a dealer determines the cost of labor will exceed 75%

If a dealer determines that any combination of parts & labor will exceed 75%

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Hand-Held Warranty Exchange Policy

UPDATE

To save time and cost, the preferred method of exchange is to refer the customer to the retailer as follows:

1. The authorized dealer should write the customer an invoice stating the situation
2. The customer should visit the retail store, from which the original product purchase occurred
3. The retailer will exchange the hand held product
4. The retailer will then contact MTD's Single Point of Contact (SPOC) team for credit
5. At this point, a product return to MTD may be arranged

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Hand-Held Warranty Exchange Policy

UPDATE

If this is not possible (i.e. the retailer has gone out of business or no longer carries the product line)

MTD's customer service group may handle the situation as follows:

1. MTD will obtain the customer's information, such as name address & phone number
2. MTD will obtain product information, such as model and serial numbers
3. MTD will obtain dealer information, such as dealer name, address, phone, and verify failure
4. MTD manager will approve the exchange
5. MTD will ship the designated dealer a replacement unit
6. A customer can then acquire their product replacement from the designated dealer

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UPDATE

Hand-Held Warranty Exchange Policy

Service Dealer should submit claim for .50 (30 Min.) diagnostic labor time for unit exchange policy

Note: MTD should only be shipping the replacement product to the dealer as a last resort

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UPDATE

Hand-Held Repair Guidelines

We have included a document that will help you determine whether you should take the time to repair a hand-held product

It covers such topics as:

EVALUATION

CHECKING FUEL

FLOODING

IGNITION

COMPRESSION

HEAT RELATED ISSUES

MTD
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UPDATE

Hand Held Products

String Trimmer – Chain Saws -
Vacs/Blowers Edgers- Hedge Trimmers

The "Repair Time Allowed" for profitability,
Of almost any "Hand Held Chore
Performer product must be based on:
"What is the retail value?"

With this concern, several items and
thoughts must be kept in mind

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UPDATE

Start With a Systematic Repair Procedure

Observation

- Condition of unit, does it show reasonable care?
- Is tampering and damage obvious?
- Proper trimmer line or spool?
- Recoil rope or spring problems?
- Engine related problems?

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UPDATE

Start With a Systematic Repair Procedure *Cont.*

Evaluation

- What was the retail value when new? Were there add on accessories that will place the unit in a higher pricing evaluation?
- Is it within the warranty periods?
- How old is it? Age, must be considered, the possibility of engine fatigue, excessive usage, (commercial use), causing wear and heat conditions
- Items not considered a manufacturing defect, etc.

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UPDATE

Engine Issues

Fuel:

- Smell test. Old fuel smells like shellac
- Has the chore performer been sitting for a season or longer with fuel in the gas tank? Drain tank and replace with fresh fuel
- Save a sample of the old fuel and compare with the recommended fuel
- Save in a see-through container to show the customer. The container will show a bad mix, water and dirt content

Do not blow carburetors out with air pressure, damage to internal parts could occur

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UPDATE

Engine Issues *Cont.*

Fuel/Oil Mix

- For 2-cycle units, a proper fuel/oil mix is necessary. Manufactures have their preferences for the best performance of their engines

These ratios are usually: 32-1, 40-1 or 50-1

- **For testing purposes only,** if all other factors are good, any of the products should start with a 32-1 mixture
- If the equipment is “New” the result will be immediate and the unit will run and will probably be okay!

MANY UNITS WILL START AFTER DRAINING THE FUEL SYSTEM AND ADDING A FRESH FUEL MIX

Still won’t start? Move On

UPDATE

Failure to Start

Check spools for the proper gauge of trimmer line

- Is the line properly wrapped on the spool? The wrong wrap and line diameter can cause hard starting conditions
- Check air filters and gas tank filters (clean / replace)
- Check gas lines for hardening, broken / cracked, loosely connected, or for wear holes, causing the line to take in excessive amounts of air

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UPDATE

Failure to Start *Cont.*

Listen:

- When pulling the recoil rope to start, the engine will attempt to start, when this occurs, immediately, remove from the choke position and pull again. Generally the unit will respond and run

Flooding:

- If this should occur, because you missed the point when the choke should have been backed off
- Remove the spark plug, on Chainsaws and Trimmers remove the fuel from the spark plug hole, dry the plug and reinstall
- Try starting again without choking

2-Cycles can easily be cleared by opening choke and wide open throttle and pull recoil rope

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UPDATE

Heat *Cont.*

The cause is usually obvious, for all products. On chain saws, saw dust can be jammed packed around the cooling fins, causing blocked air flow passages inside the housing

Chain saw overheating can be due to forcing the engine to run without proper chain lubrication and trying to cut with a dull chain

Air-cooled engines must be kept as clean as possible. Saw chains must be kept sharpened

Time to call a “Halt” or “Next” and “Move on.” Communicate the repair/replace options with the customer. The customer must feel you have applied your best efforts to save their investment

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Further Failure to Start: *Cont.*

UPDATE

Ignition:

- Replace the Spark Plug and/or check for spark with a tester away from the spark plug hole to prevent a possible flair-up fire
- Depending on condition and age, changing the spark plug would be the next thing to do after you have performed a fuel test

Still will not start:

- Check the Air Gap between the flywheel and the coil and adjust, (generally in the range of .008 to .010)
- While checking, determine if the coil needs to be replaced
- Take a continuity test of coil and on/off switches

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UPDATE

Observe:

Visually check the wiring and check the wire path for the possibility of a pinched or shorted / broken wire

If the coil shows a resistance reading of around 90 to 160 Ohms, at approximately 70 degrees Fahrenheit, the coil windings are good

Still will not start: Move on

If you have ignition and it still appears to be a fuel issue, consider rebuilding the carburetor. It is cheaper to stock rebuilding kits then it is stocking various carburetors; generally Walbro or Zama Carburetor Kits

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Compression Test

Prior to rebuilding, check the compression. If compression is within specs, consider rebuilding the carburetor

When checking for compression:

- If the unit has a compression release button, be sure to close when checking
- If compression is below 60 PSI. further engine analysis is necessary

If the unit is a 4 cycle, check and adjust the valve clearance prior to testing compression

UPDATE

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UPDATE

Heat Issues

The remaining factor to be considered:

- You could now encounter a major repair and the need for a short block
- Compare the cost of repair versus cost of replacement
- Remove the spark plug, pull the starter rope slowly and look for evidence of excessive heat, and scoring on the sides of the cylinder, caused by heat or dirt ingestion
- On a two cycle unit, remove the muffler and, using a light, look into the exhaust port and observe the condition of the piston and rings

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Conclusion

There are many extensive trouble-shooting guides available to increase knowledge with pictured analysis for reference

With the in-depth knowledge and experience gained each time you work on a hand-held engine, you will gain evaluation speed. This added experience can still only be applied as time will allow in order to be profitable

UPDATE

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P25 Series of engines

25cc 2-cycle

MTD GENUINE FACTORY PARTS DIRECT

MTD Products Inc - Product Training and
Education Department

Identifying the engine

P25

- 25cc's of displacement.
- Muffler on side of engine.
- fuel tank on bottom of engine.
- Air filter on side of engine.

The P25 series of engines are used on a variety of string trimmers. These engines have:

- 25cc's of displacement.
- Piston ported/loop scavenged design.
- Cantilever crankshaft.
- Used on opening price point units.

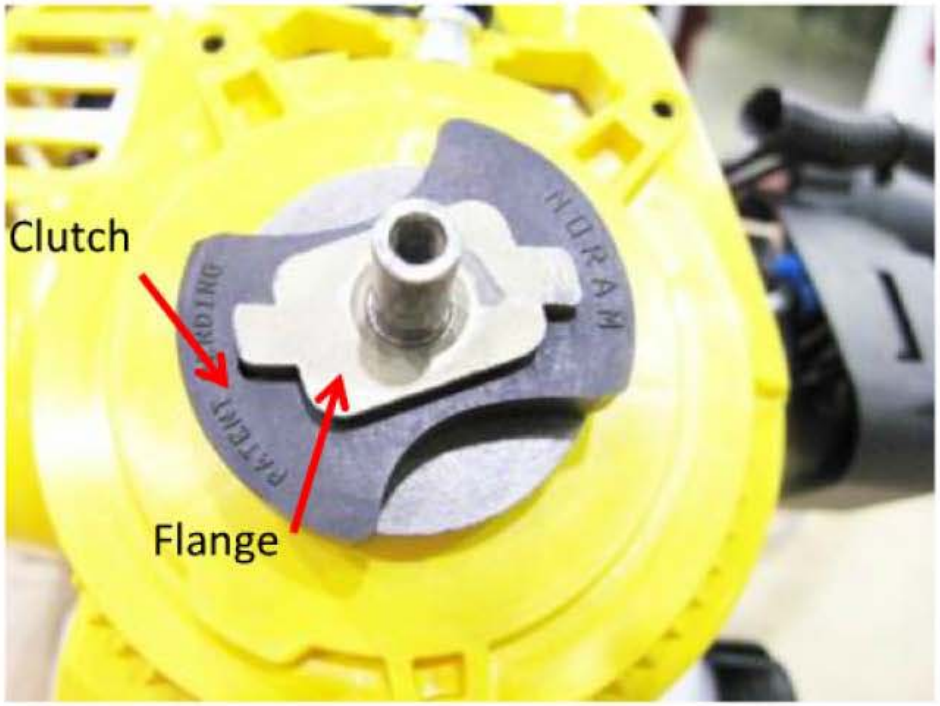
Identifying the engine

A31

- 31 cc's of displacement.
- Muffler on back side of engine.
- Fuel cap on top of engine.
- Air filter on rear of engine.
- Reed valve/loop scavenged design.

Clutch

- The P25 series of engines are equipped with a rubber clutch.
- The clutch is only used to disconnect the drive system for easier starting.
- The clutch engages at around 2,000 RPM, which is lower than the idle speed of these engines.



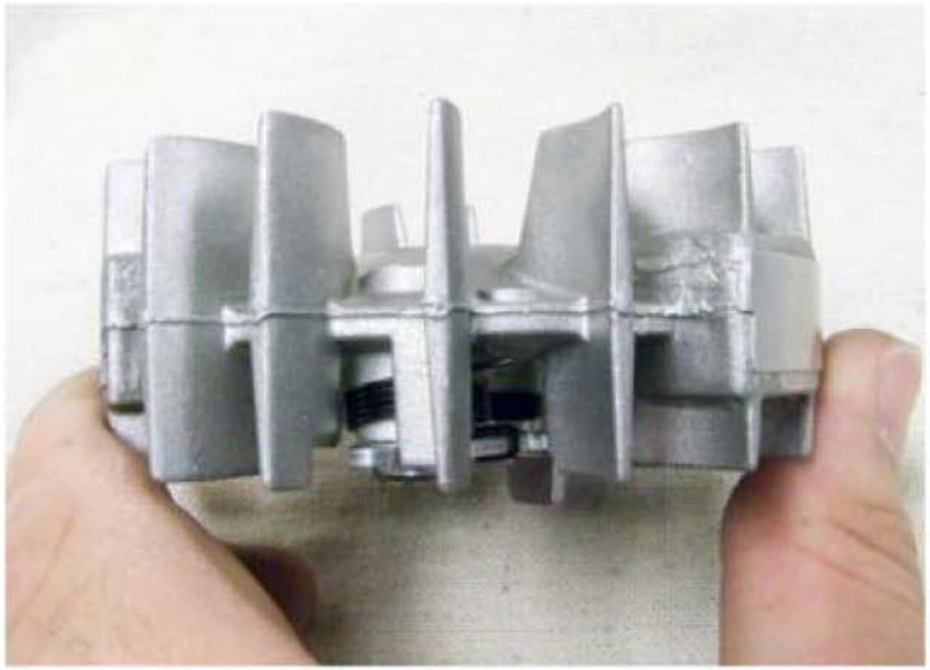
Clutch

- The clutch can be removed/installed using clutch tool #797-00070.

Flywheel

- The P25 series of engines use a flywheel that is a double sided fan.
- This increases the cooling capacity of the flywheel.

  NOTE: These flywheels do NOT have integral keys.



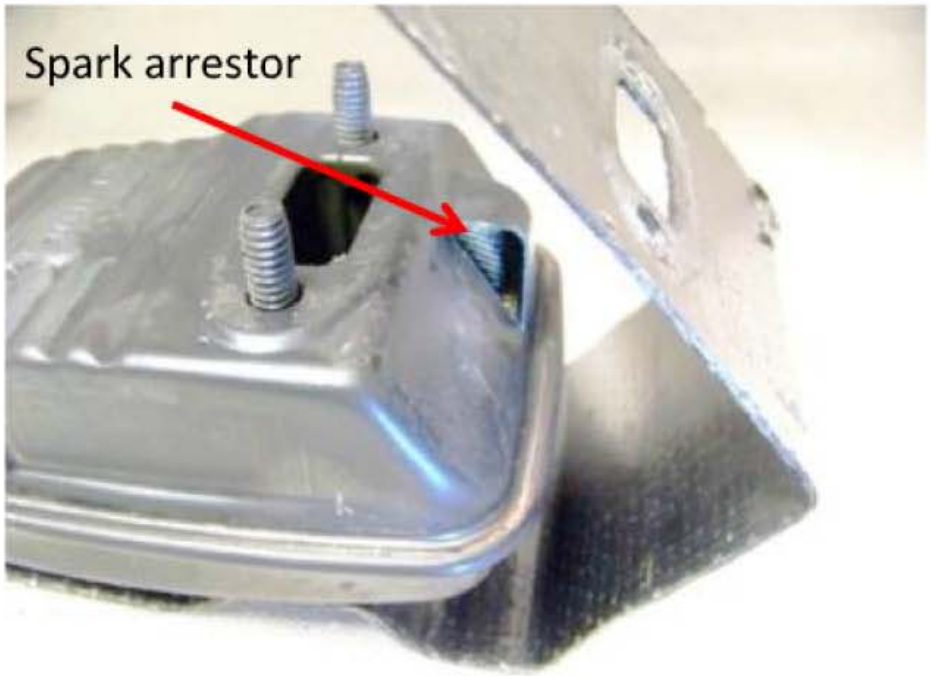
Carburetors

- P25 engines use a Walbro WT series (or equivalent) carburetor.
- The primer is part of the carburetor on these engines.

Spark Arrestor

- The spark arrestor is located in the muffler's outlet.
- It is not very accessible for service or cleaning.
- If damaged, replace the whole muffler.

NOTE: The graphite gasket must be replaced every time the muffler is removed.



Handheld Fuel Systems

- All MTD handheld engines are being switched to low permeation fuel line (black) per EPA regulations.
- Fuel lines and filters will be service as part of the fuel tank.

  NOTE: On engines that have connectors in the fuel lines, the lower fuel lines are part of the tank and the uppers are part of the carburetor.

Mini 4cycle Engine

UPDATE

Spark Plug:

- Champion RDZ19H, gasket seat plug
- Torque the spark plug to 100-110 in. lbs.(11.3-12.4 Nm)
- The spark plug gap is .025”(.655mm)

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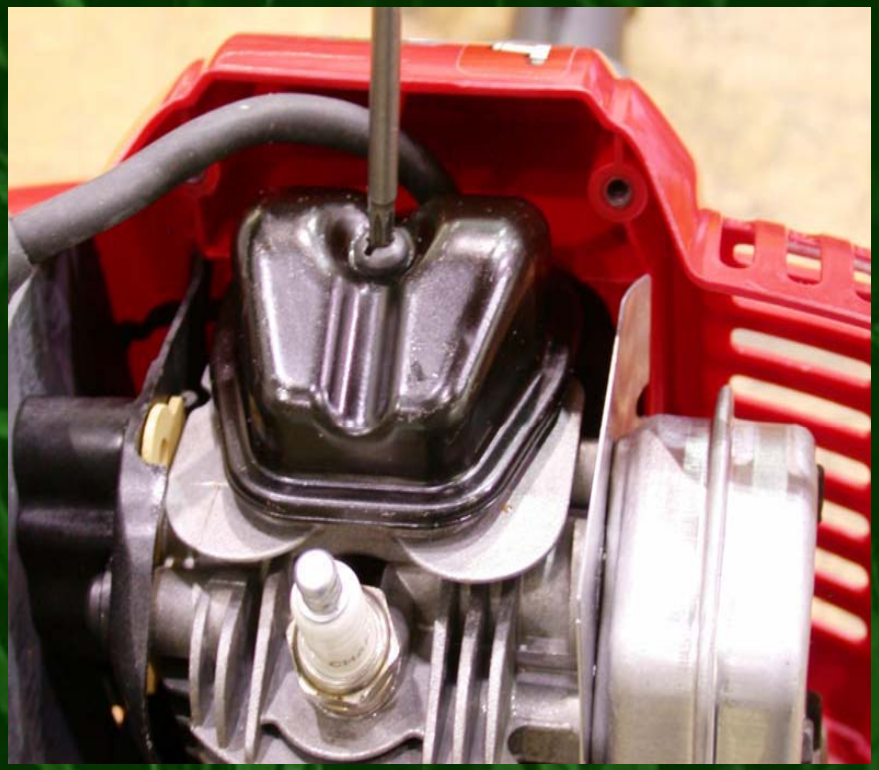
Mini 4cycle Engine

UPDATE

- To adjust the valves remove the valve cover with a T-25 driver



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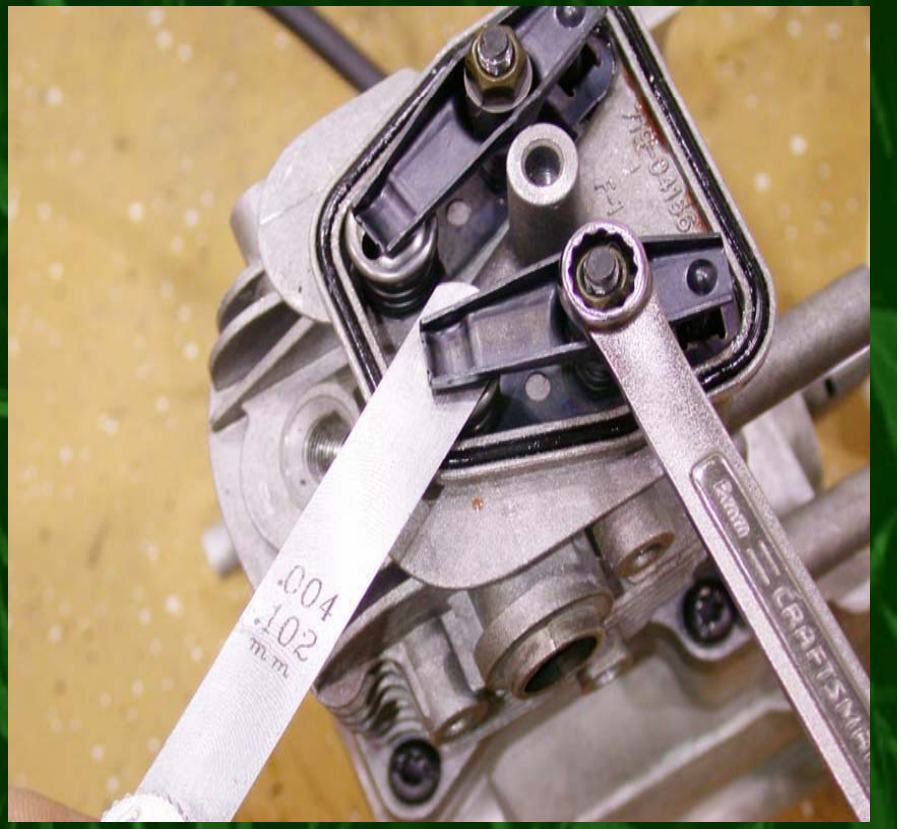
UPDATE

Mini 4cycle Engine

- Use the starter rope to turn the crank shaft to bring the piston to top dead center of the compression stroke (valves closed)
- The valve clearance for this engine is .003”-.006”(.08-.15 mm) for both valves



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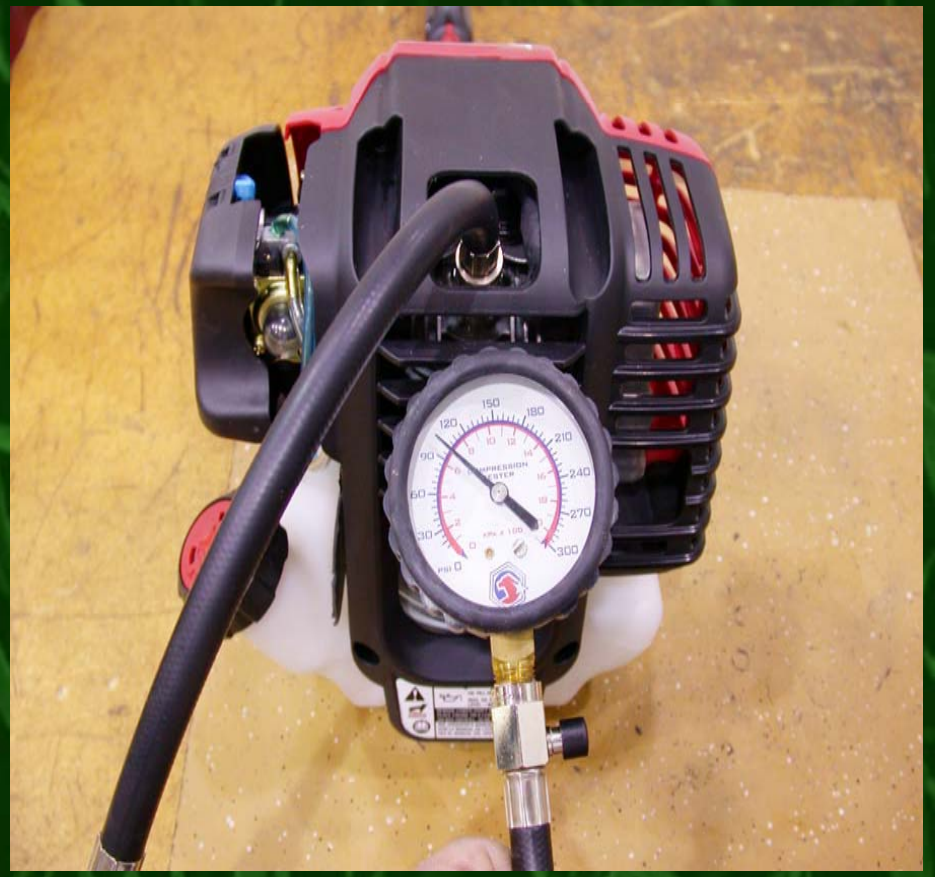
Mini 4cycle Engine

UPDATE

- If the engine has less than 90 psi (6.2 bar) compression, the carburetor will not have enough vacuum to draw fuel into the engine
- The engine will have to be torn down to determine the cause of the low compression
- If the engine has more than 125 psi (8.6 bar), the engine will not breath properly
- Check the valve adjustment
- Check for restrictions in the exhaust



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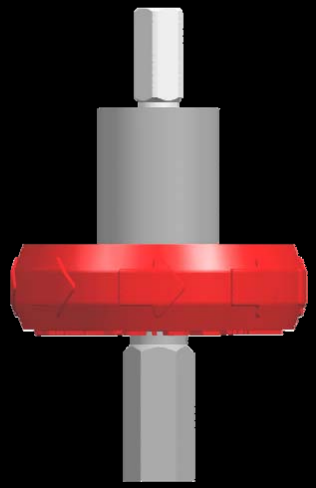
Handheld Electric Starter

Press2Start™ Electric Starter 625-04120

- 110V electric starter
- Non-serviceable
- 2 year warranty
- For warranty, replace the whole starter

Bit Adaptor for Drill Power-Start



49MESCBP953

UPDATE

Troy-Bilt Horse

Oil capacity of the power unit case is 60 ounces. The tine drive case capacity is 12 ½ ounces

To check for proper oil level in the tine drive case, place 3 stacked 2X4's under the depth stake. Unit can then be checked for proper oil level

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MTD Tiller – Model 410/430

UPDATE

Reports from the field indicate that some of these tillers are hard to push in neutral

The following test must be performed before condemning any tiller gear case

1. Start the engine and engage the tiller gear case, forward and reverse making certain the tiller tines do not hit the ground
2. Continue this for approximately two minutes making certain the lubrication inside the gear case has a chance to lubricate all rotating gears and shafts
3. Turn the engine off and attach a fish scale to the front of the tiller counter weight using a suitable rope or wire

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UPDATE

MTD Tiller – Model 410/430

TEST CONTINUED

4. With the tiller on a smooth hard surface, and the tiller gear case in neutral, attempt to move the tiller forward while pulling on the fish scale

   NOTE: Have a helper lift the tiller tines off the ground using the tiller handles. It should take no more then 20 to 25 pounds pull to move the tiller

5. If the requirements cannot be met, and you exceed the recommended limit, the gear case must be removed from the tiller and dismantled for further review and inspection

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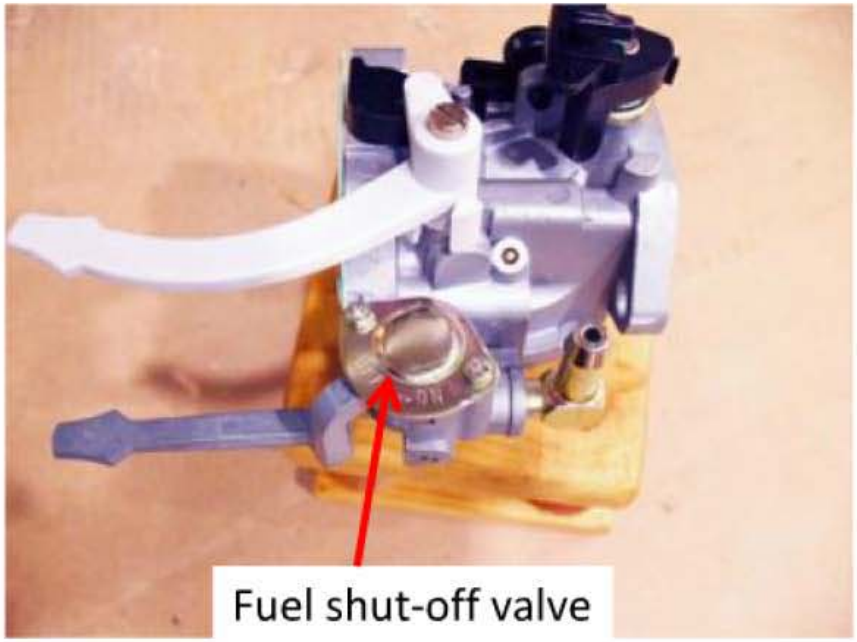
Log Splitter Engines

All MTD engines used for log splitters are equipped with a fuel shut-off valve.

- Vertical engines use a standard inline valve.
- Horizontal engines have the valve built into the carburetor.



Testing the Hydraulics

UPDATE

Before testing the hydraulics:

- Make sure reservoir is full with the proper fluid
- The beam is oiled
- Check the air filter and oil of the engine
- Using a tach, set the engine to 3500 rpm
- Check the belt condition and tension

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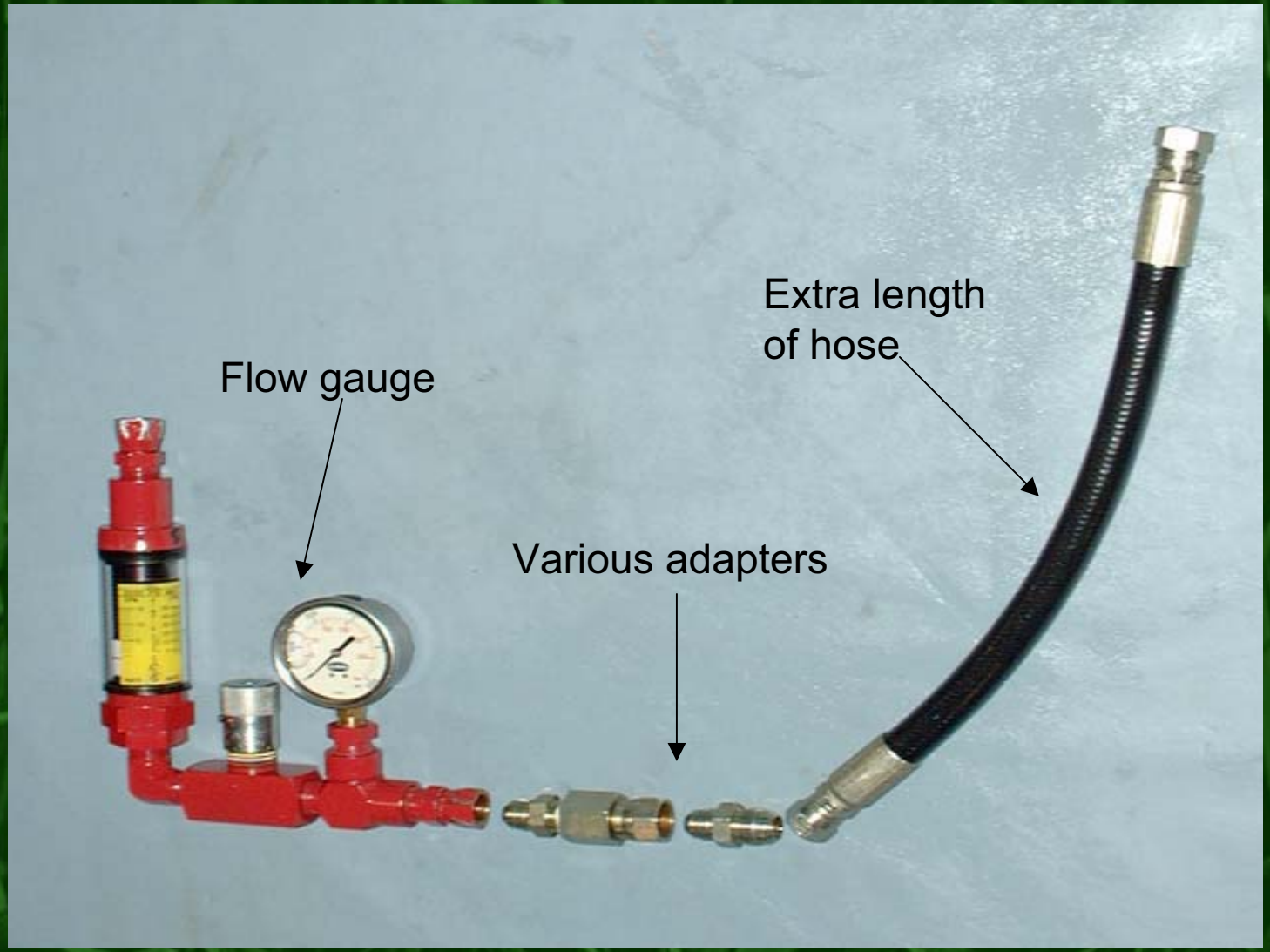
UPDATE

Equipment Needed



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Install the Flow Gauge at the Pump

UPDATE

Install the flow gauge between the pump and the inlet port of the control valve

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UPDATE

Walk Behind Snow Throwers

Walk behind snow throwers with electric discharge chute control may be changed to manual operation using Kit # 753-04027

For 2004 the hex shaft used in previous production 717-1444, is being replaced by a new hex shaft 717-0494. The new hex shaft uses a snap ring versus a roll pin

When stock of the old hex shaft has been depleted the old number will be substituted with the new number

MTD
For A Growing World.™

2007

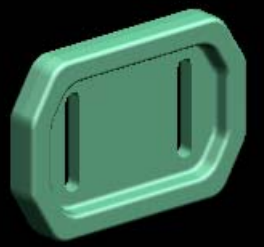
People in
short pants
HEMI
Snow just got scared…
and ran
08 20 2005

300 Series Compact

New reversible low-wear polycarbonate slide shoes used on some models.

This part will fit all 300 thru 700 series snowthrowers

Part number is 731-06439.



UPDATE

Sealed Transmission
Replacement Only

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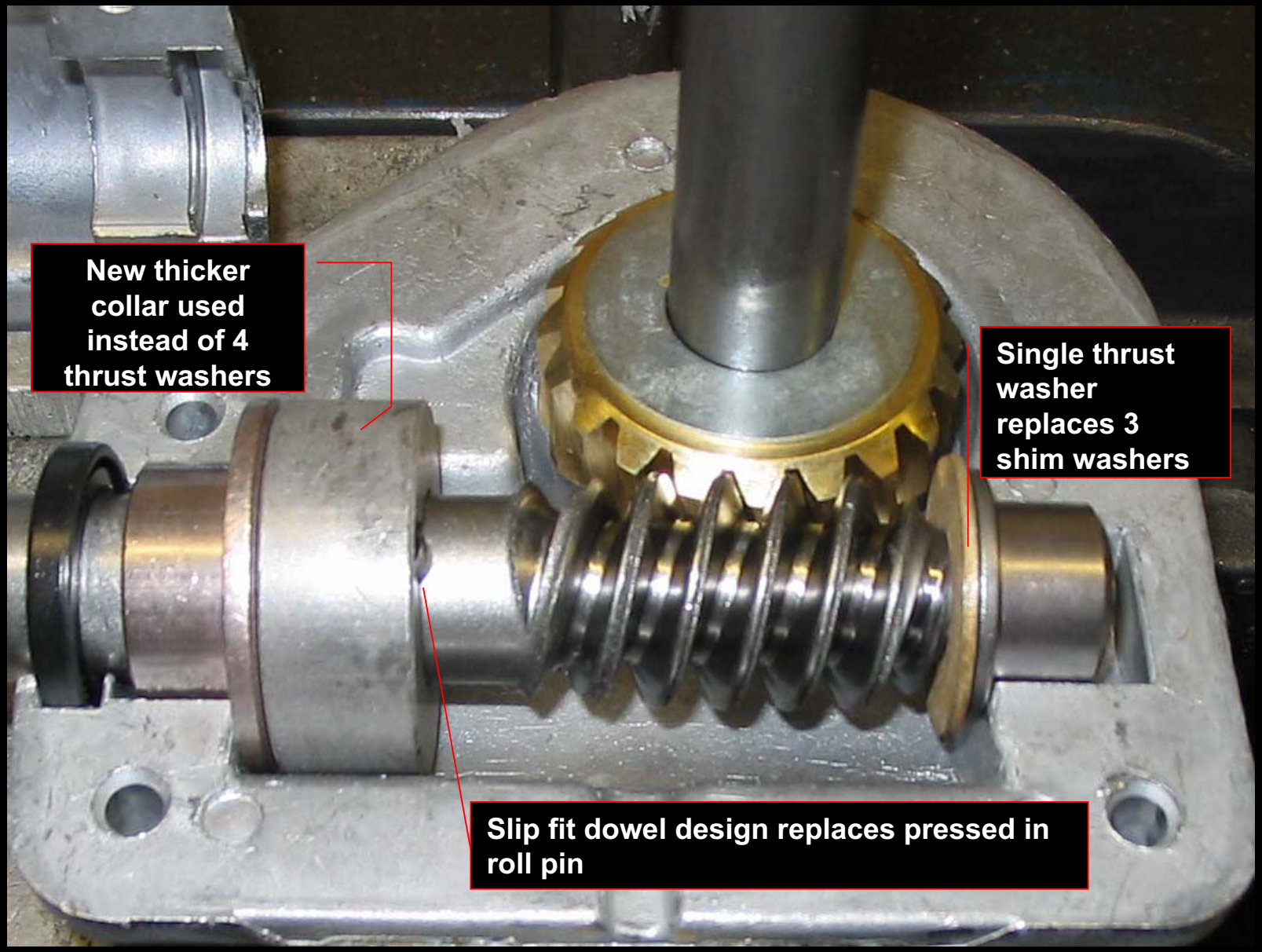
500-600 Series 2nd Generation

Small Frame
22” Thru 30” Models

500 -600 Series Changes

- Over 90 percent is new for 05
- All units come fully assembled
- New Extreme augers
- 22 – 28” units have 2 augers per side
- 30” units have 3 augers per side
- New transmission components
- New second stage fan with Double D drive system
- Single 1/2” cog-style auger belt
- Locked drive wheels on all models
- New Polypropylene Chute adapter
- New belt cover to help belt trap out
- No more PTO (Camshaft Drive)
- All new handle panel designs
- Needle bearings used on drive shafts
- New friction wheel drive
- New lower handle mounting
- Snap on chute keepers
- New auger gear boxes

Auger Gear Box Changes

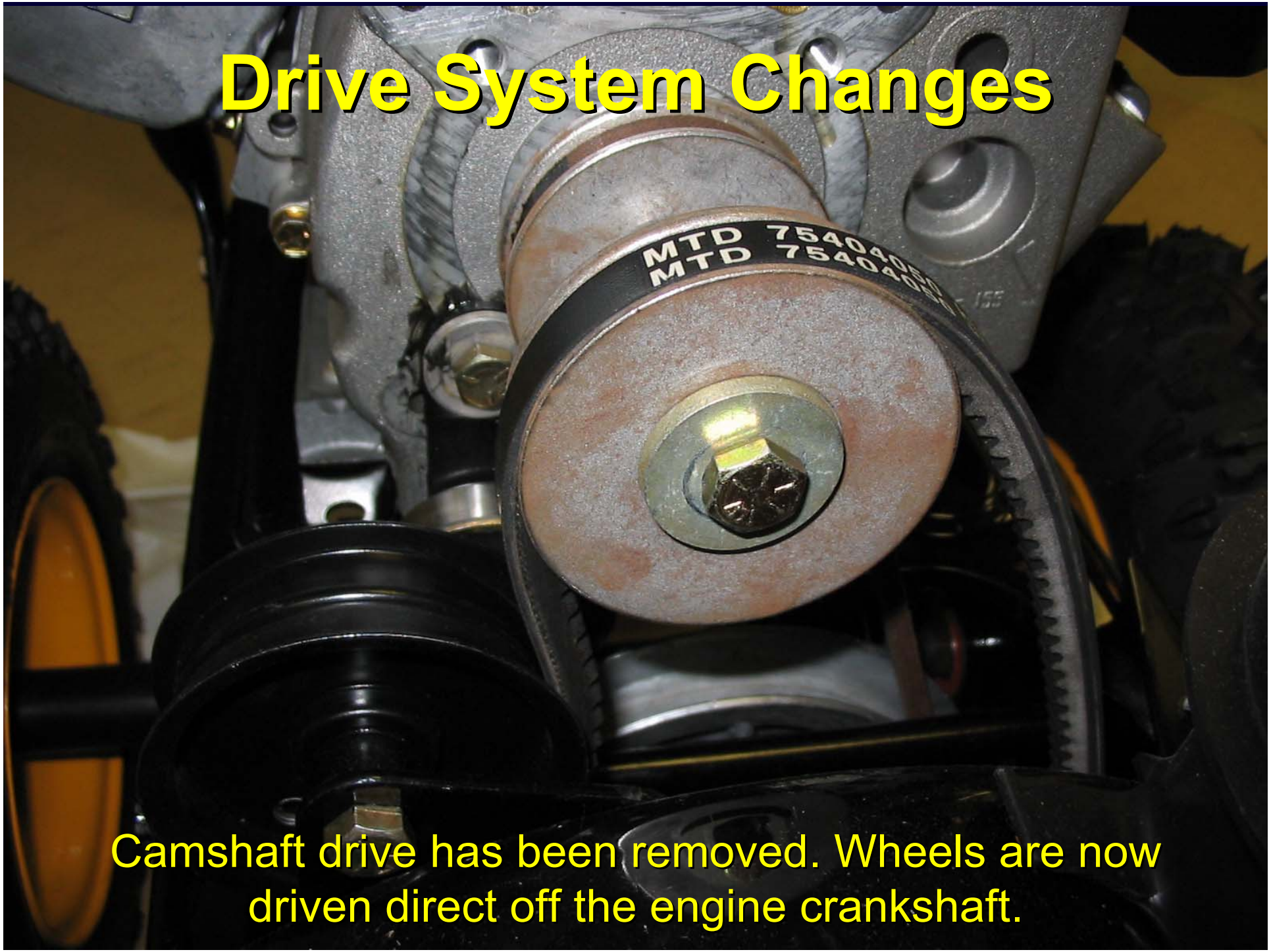

New thicker collar used instead of 4 thrust washers
Single thrust washer replaces 3 shim washers
Slip fit dowel design replaces pressed in roll pin

New Extreme Augers

22-28” use 2 augers per side

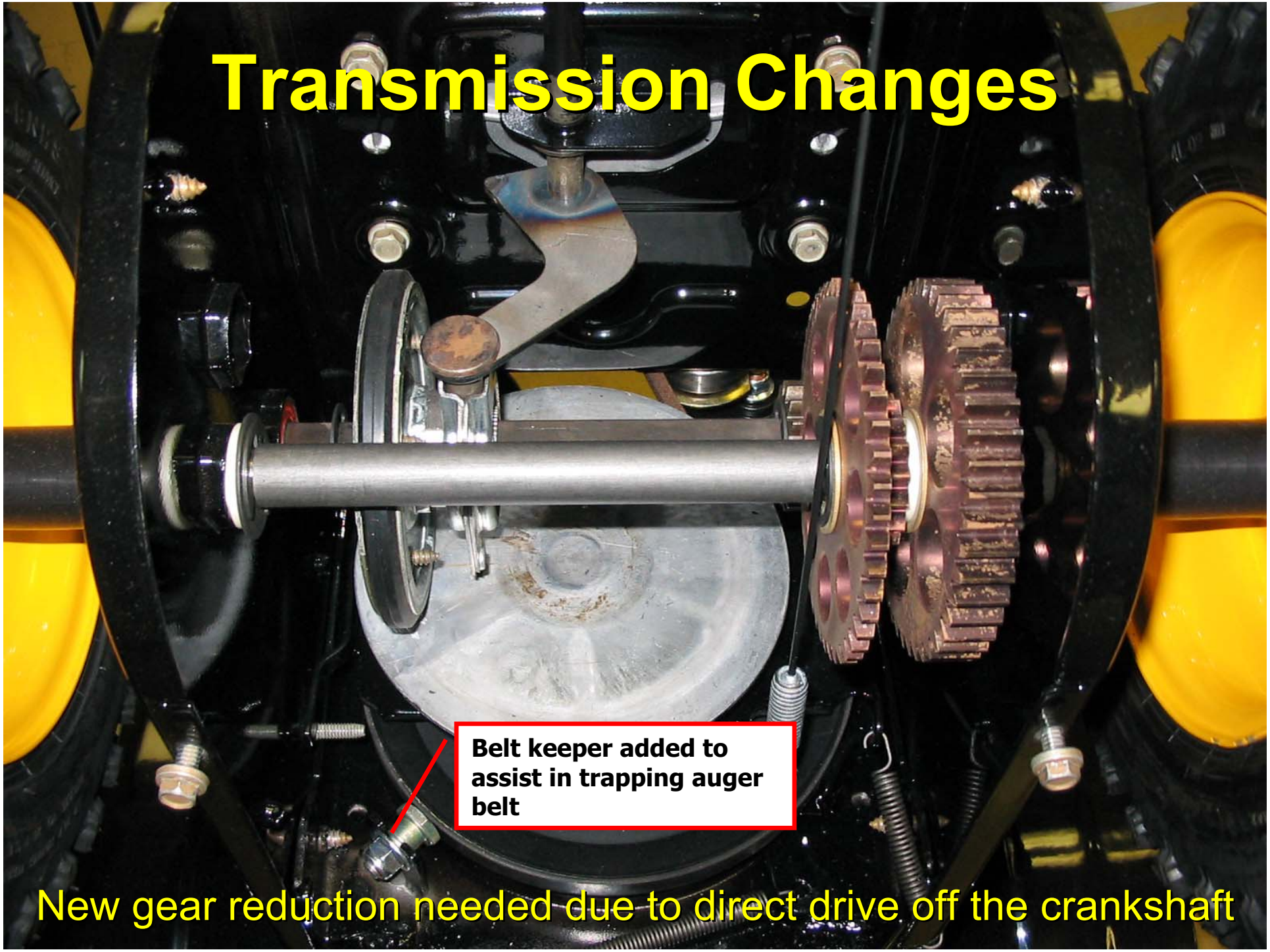
30” use 3 augers per side

Drive System Changes



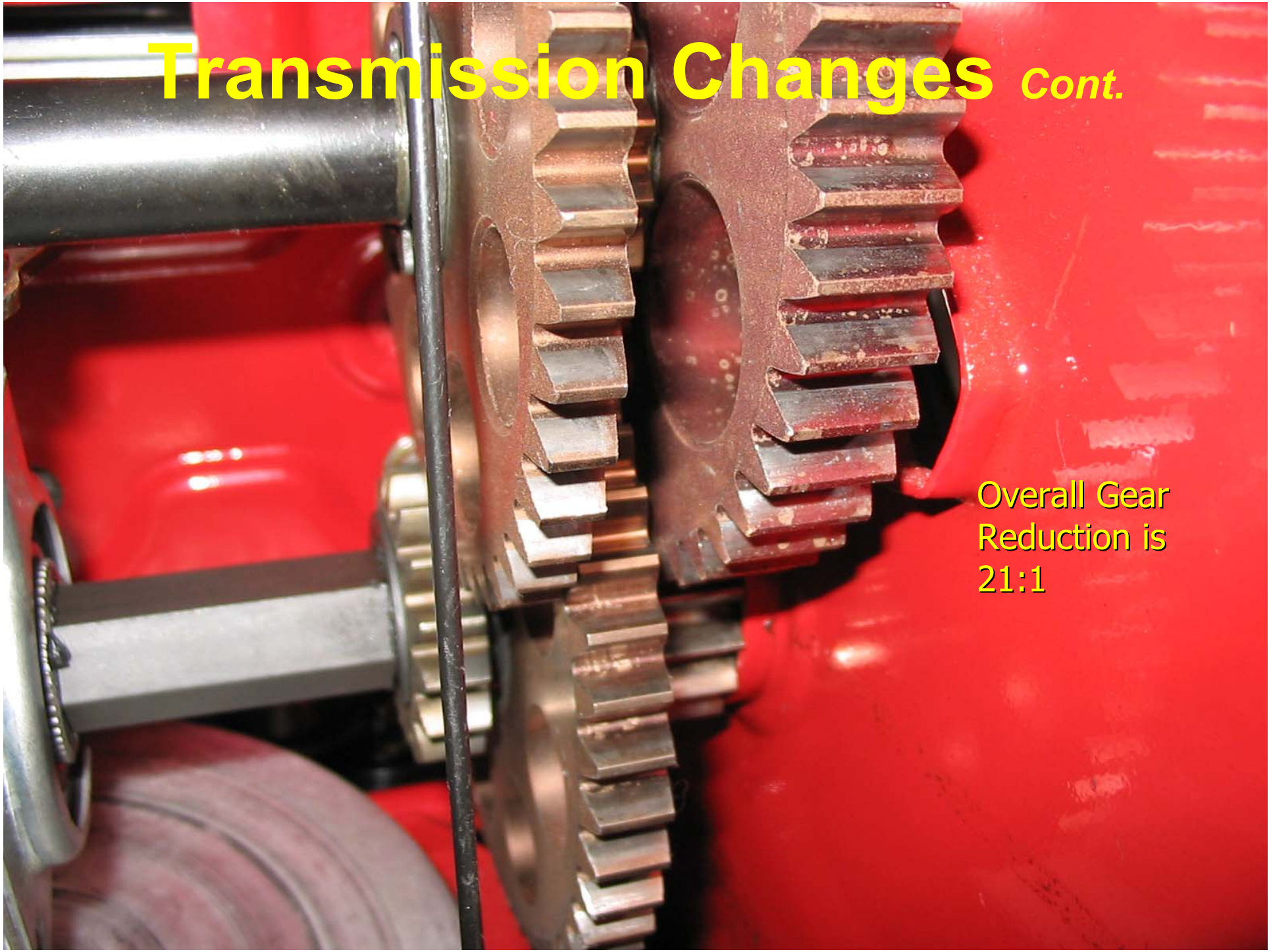
Camshaft drive has been removed. Wheels are now driven direct off the engine crankshaft.

Transmission Changes



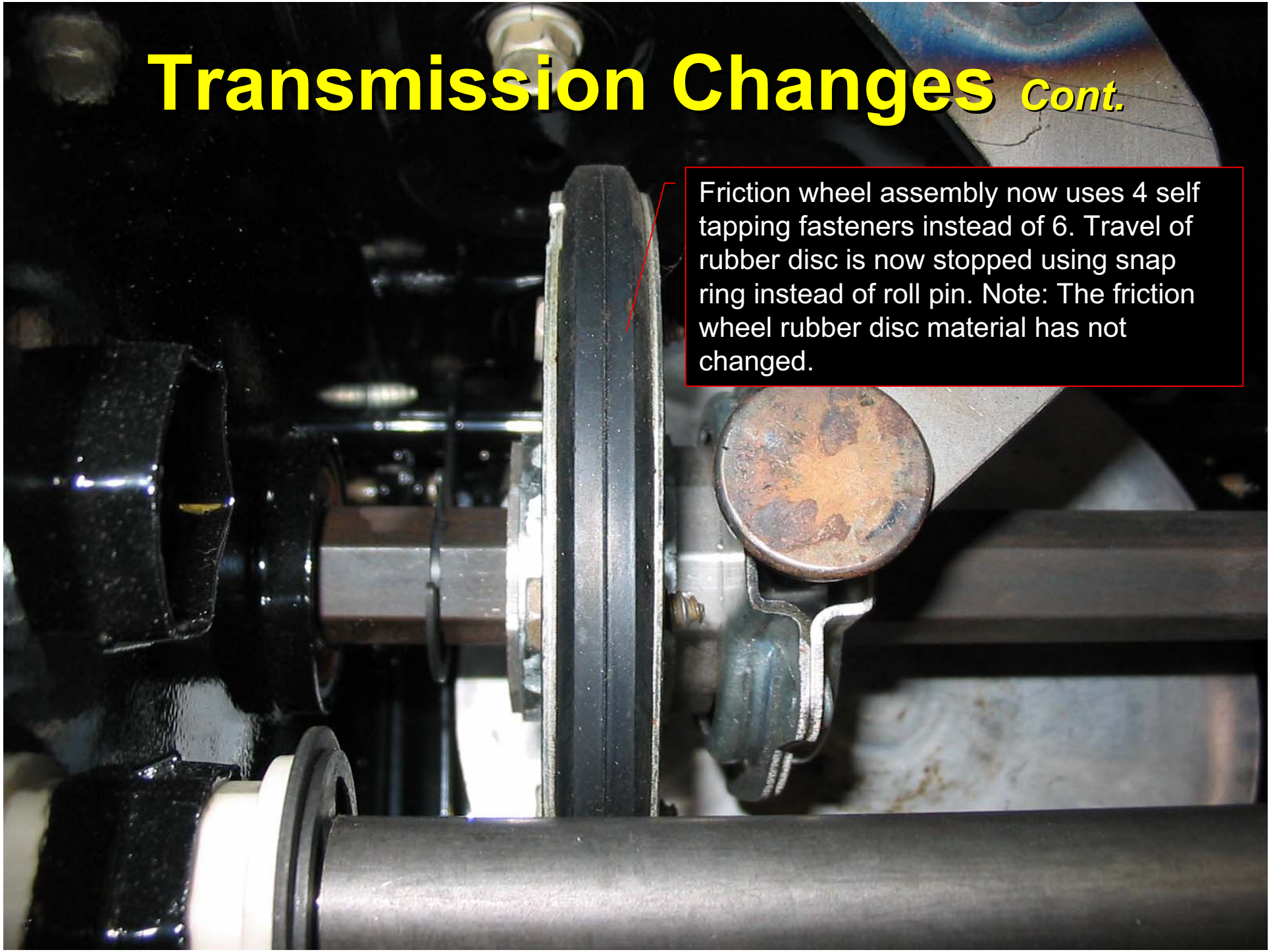
New gear reduction needed due to direct drive off the crankshaft

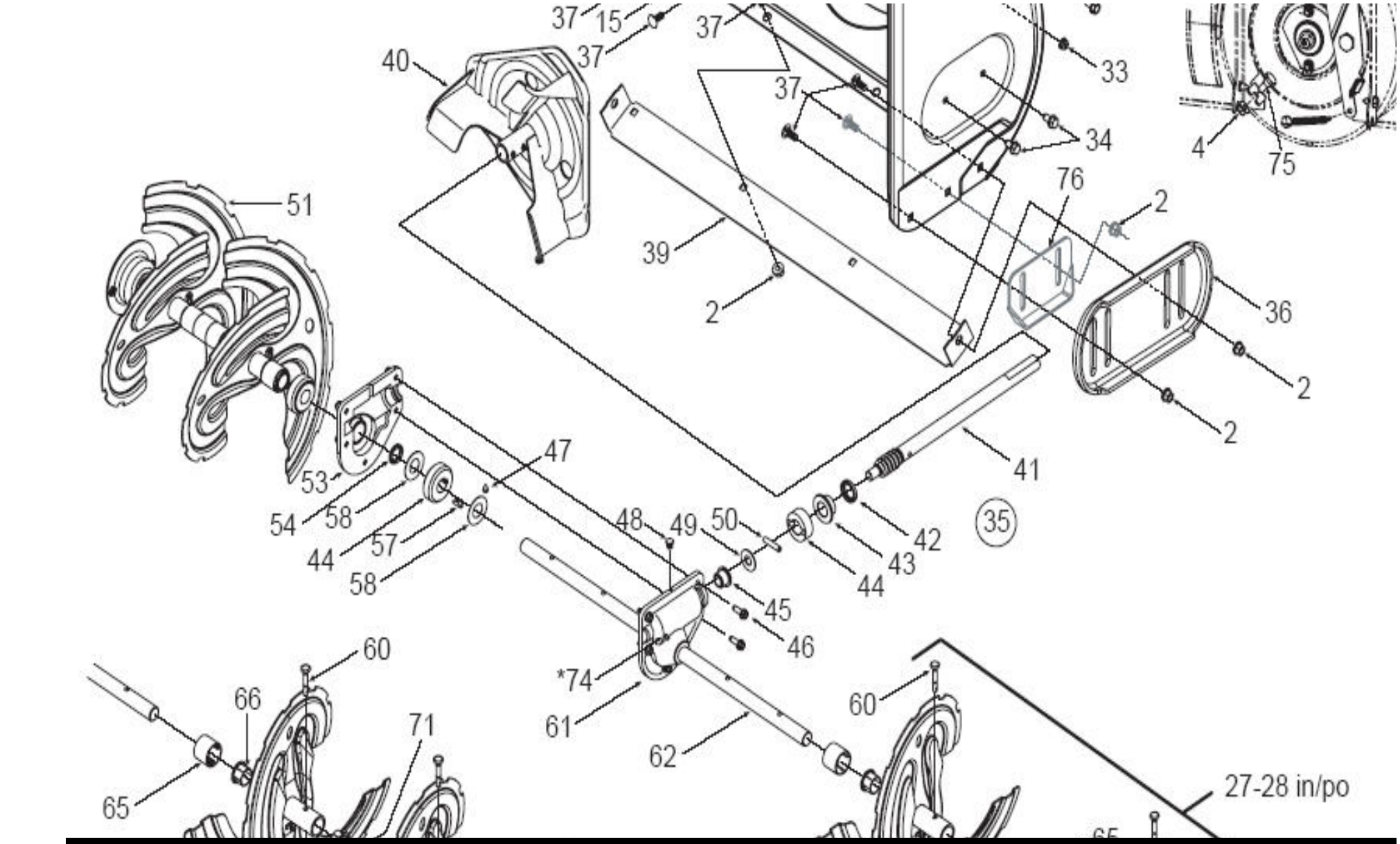
Transmission Changes *Cont.*



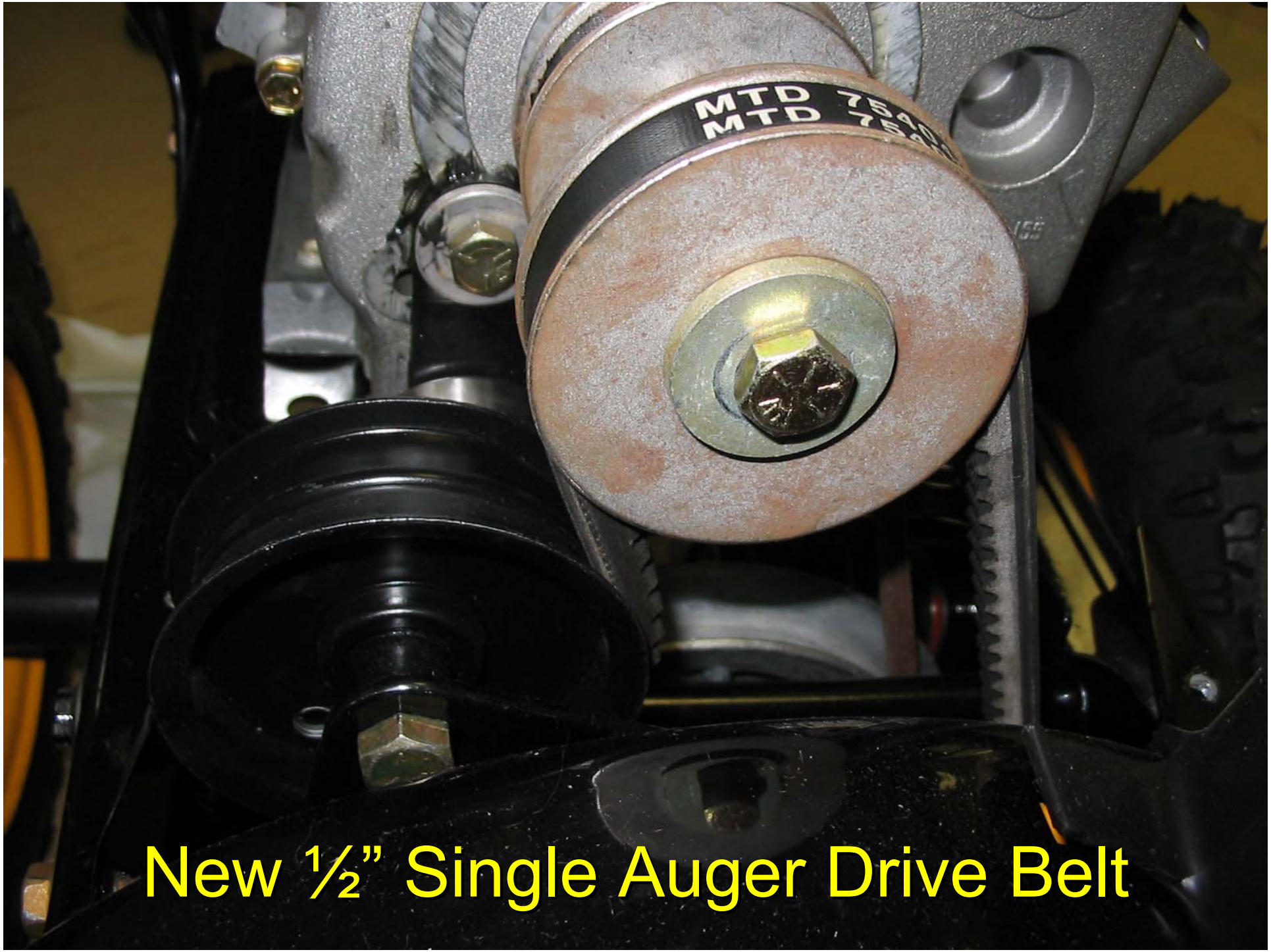
Overall Gear Reduction is 21:1

Transmission Changes *Cont.*

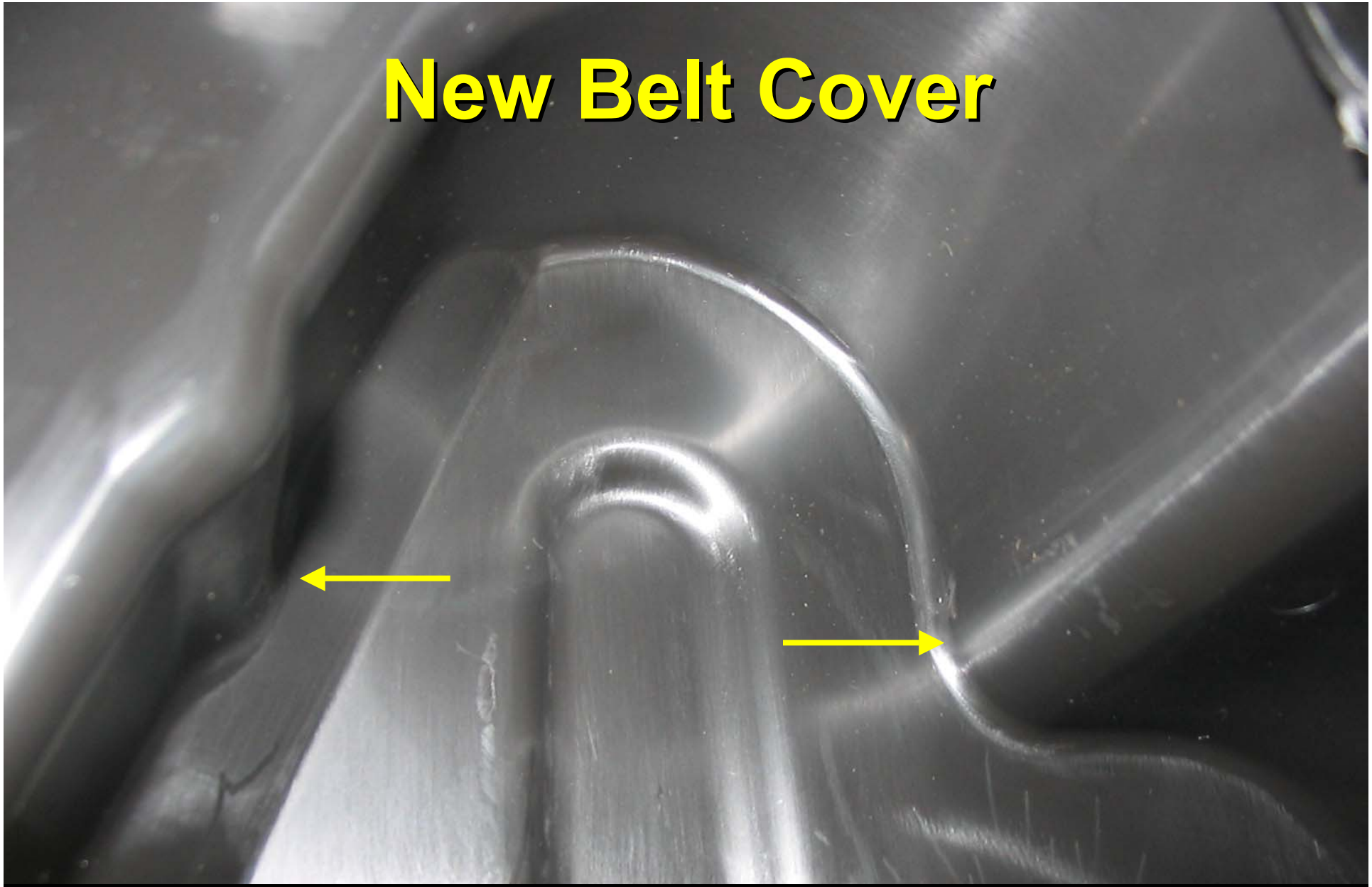

Friction wheel assembly now uses 4 self tapping fasteners instead of 6. Travel of rubber disc is now stopped using snap ring instead of roll pin. Note: The friction wheel rubber disc material has not changed.



Double D Fan Shaft & Fan
replaces splined fan and shaft


MTD 754
MTD 754
New ½” Single Auger Drive Belt

New Belt Cover



Internal mould has changed to assist trap out of the auger drive belt when clutch lever is released

New Design Lower Chute

UPDATE

New ‘Ultra High Molecular Weight’
reversible skid shoes on select models only
731-05984

MTD
For A Growing World.

New Universal Fit Slide Shoes

Part number
OEM-731-05984

Fits Toro, Sears, Murray, Husqvarna and many others.

Important

Models not equipped with a 120v or 220v starter DO NOT have a ring gear installed. In order to install a starter, a ring gear must be purchased if the customer wants to add a starter.

4P90

4P90 Features

- For wide area mowers (riders next season)
- 25.6 cubic inches (420 cc) displacement
- 8.5:1 compression ratio
- Pressurized lubrication system
- Spin on oil filter
- Serviceable pre-screen for the oil pump
- Balance shaft

P90 Engines

26 C.I.D. (420cc) Displacement

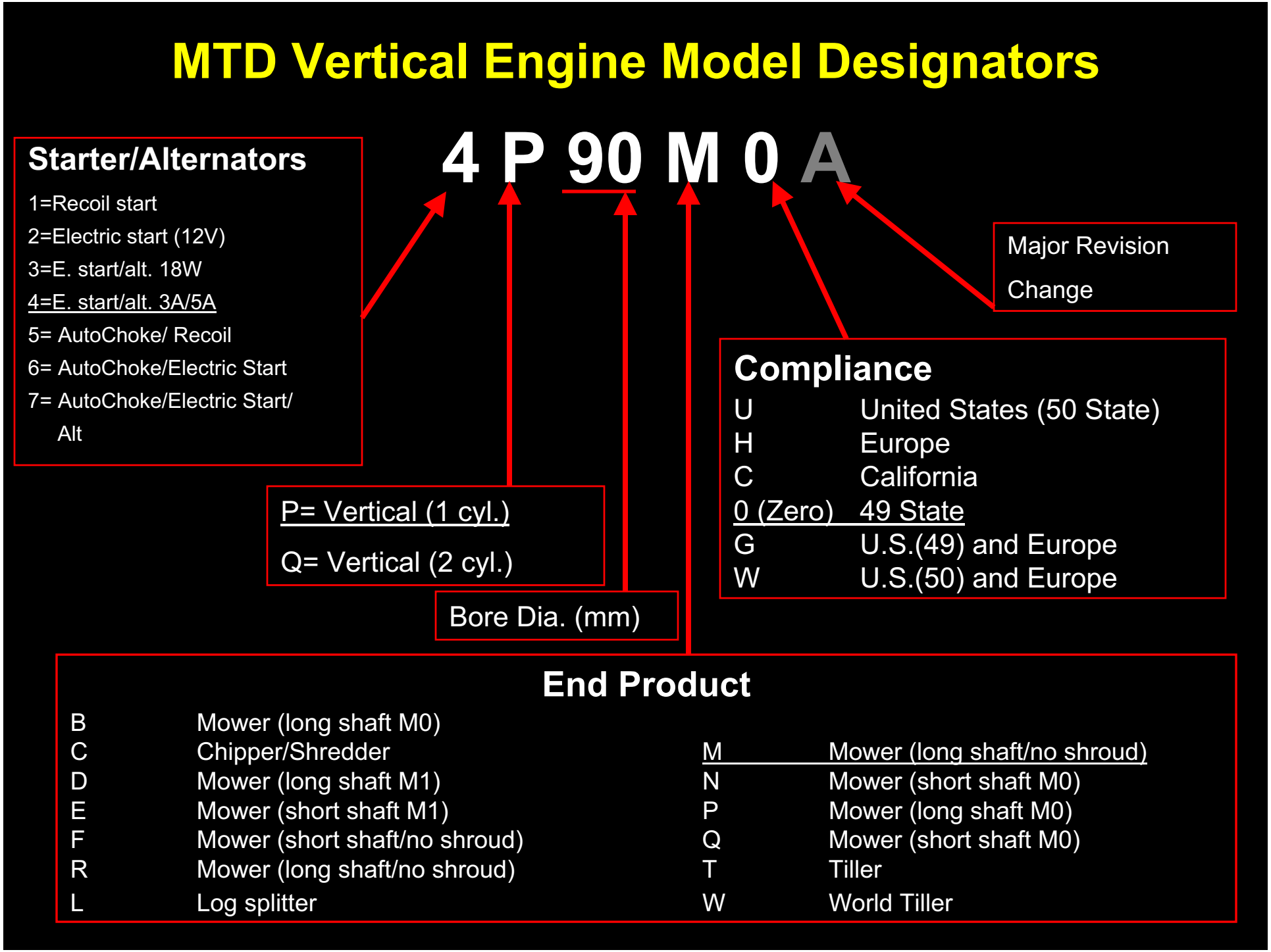
Pressurized lube to the crankshaft

Balance shaft

Power output:
more than sufficient

Model #: 4P90MO

MTD Vertical Engine Model Designators



Engine Specifications

UPDATE

Displacement	420 cc (25.6 cubic inches)
Bore	90 mm (3.54”)
Compression ratio	8.5:1
Cranking pressure	55 – 80 psi
Charging system	3.75A DC/5A AC
Oil capacity	1.7L (57.5 oz)
Maximum speed	3300 +/- 100 RPM
Idle speed	1750 +/- 150 RPM

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Maintenance Intervals

Maintenance items	Interval
Oil Change*	50 hrs
Oil filter	200 hours
Oil pre-screen	Annually
Clean the air filter	100 hrs
Replace the air filter	200 hrs
Spark plugs	100 hrs
Fuel filter	100 hrs
Clean the engine	100 hours

* First oil change at 5 hours

UPDATE

MTD For A Growing World.

UPDATE

P90 Engines Maintenance

The pleated paper air filter pushes over the neck of the air intake elbow.

A foam pre-filter wraps around the paper filter.

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P90 Engines Maintenance

UPDATE

The P90 also has a spin-on oil filter

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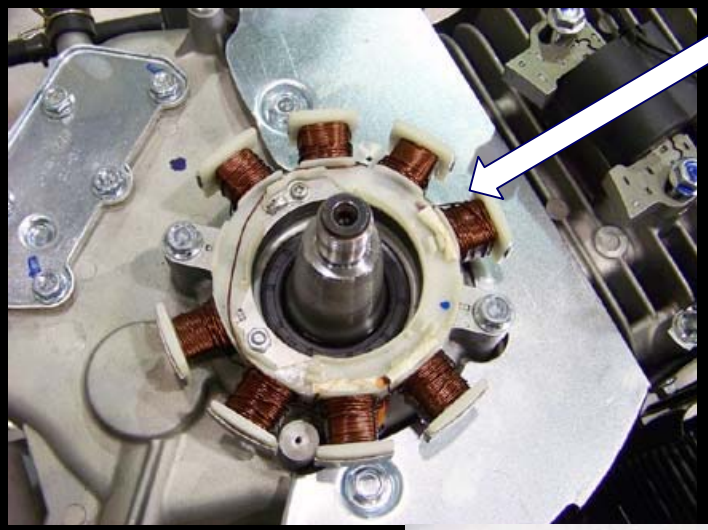
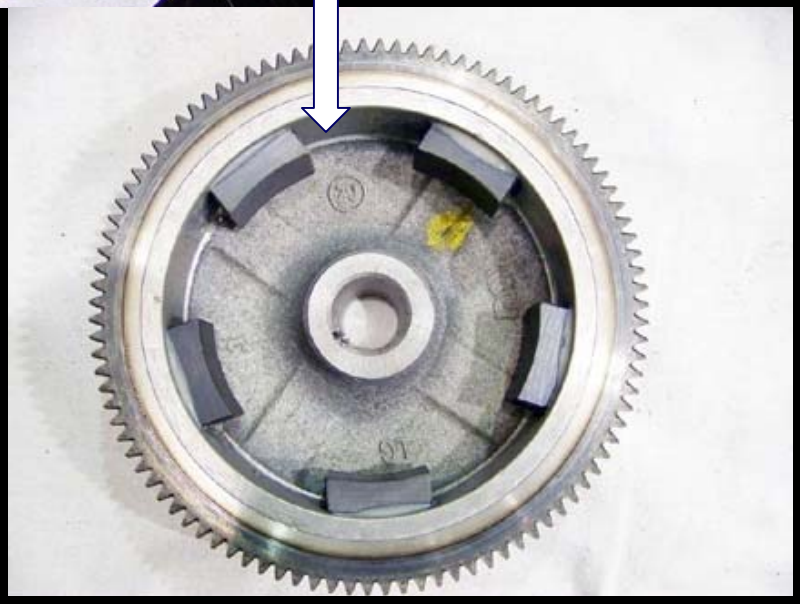
Charging System

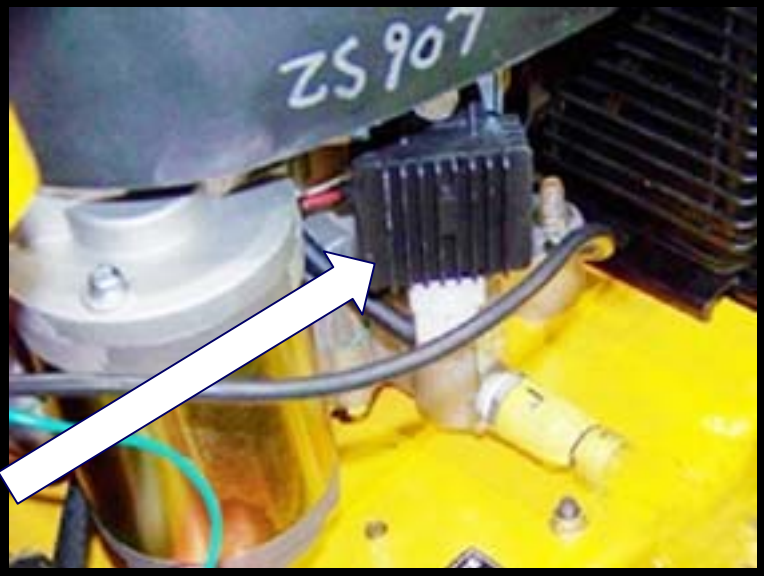
The charging system consists of a dual output alternator and a rectifier/regulator



Stator, under flywheel

Rotor = magnets on the inside of the flywheel





Regulator/ Rectifier

Charging System

A look closer at the Stator:

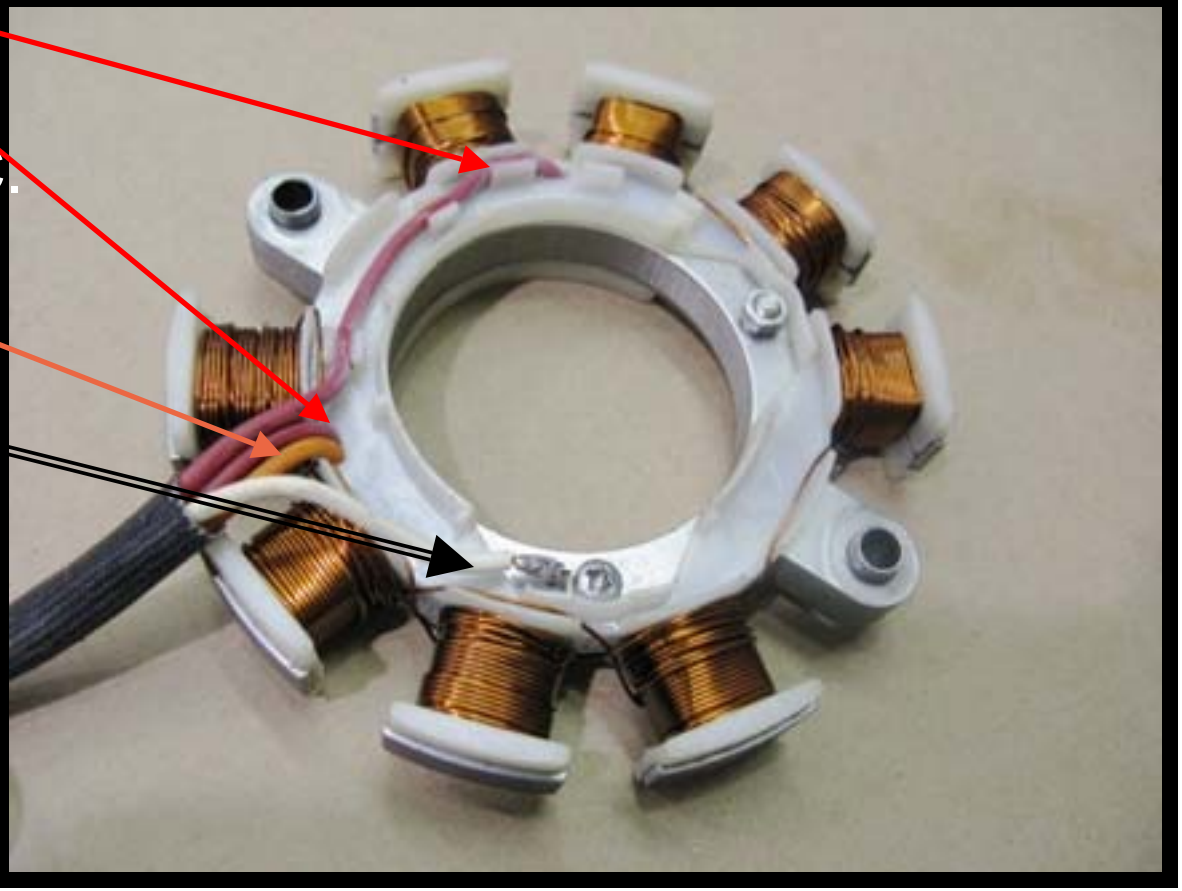
Red wires = A.C. output to Regulator/rectifier.

Orange wire = 5amp A.C.

White wire = Ground

What can we do with the Alternating Current?

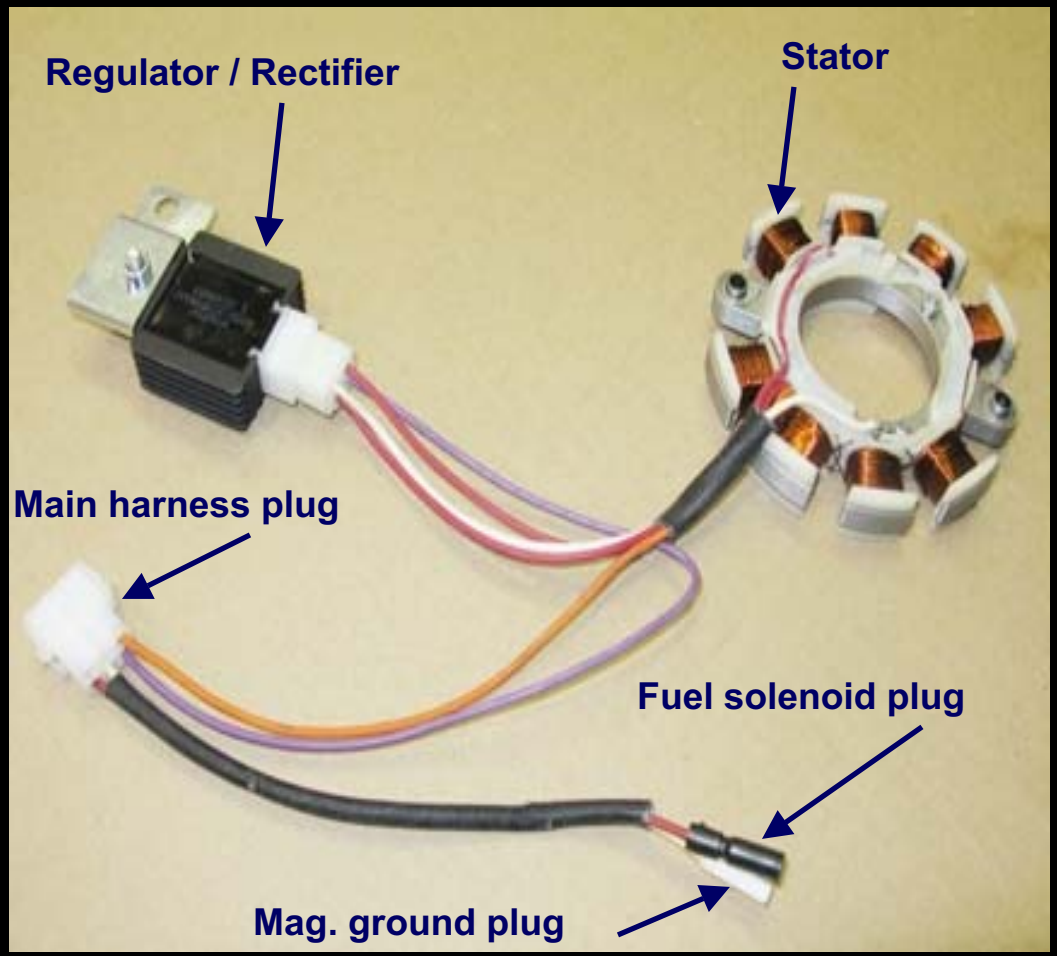
What can we do with the Direct Current?



Charging System

At the Regulator/Rectifier:

1. The paired red wires feed A.C. through.
2. The white wire provides a ground for the system.
3. The violet wire carries 12 volt D.C. to the main harness.



Charging System

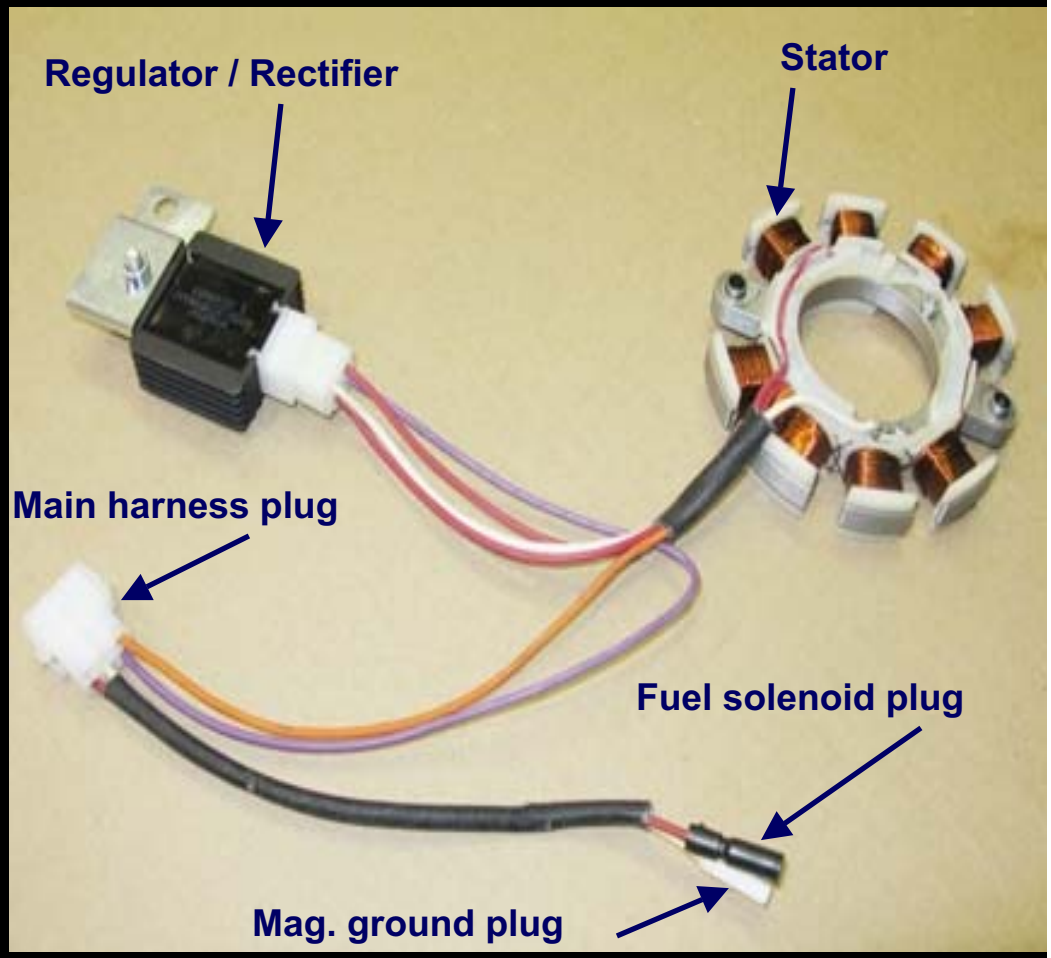
Testing the net-end result:

1. At the harness plug, we should see 11-20 V.A.C. from the **orange** wire to ground

2. At the harness plug, we should see 13.75-15.5 V.D.C. from the **violet** wire to ground

3. What if the **violet** wire does not provide the specified D.C.?

4. What if the **orange** wire does not provide the specified A.C.?



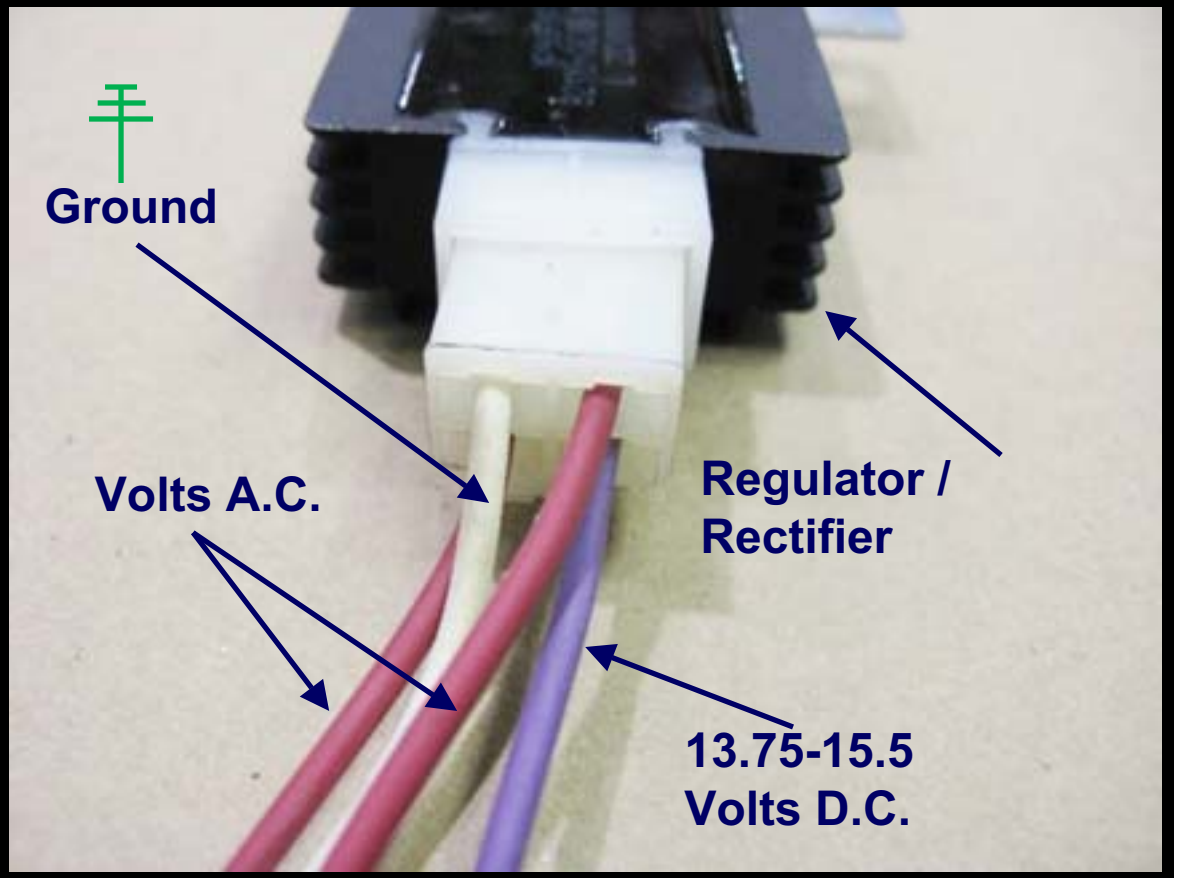
Charging System

To identify the source of a D.C. voltage output problem:

The Regulator/Rectifier must be isolated from the stator output.

Unplug the connector and check A.C. voltage on the two **red** wires.

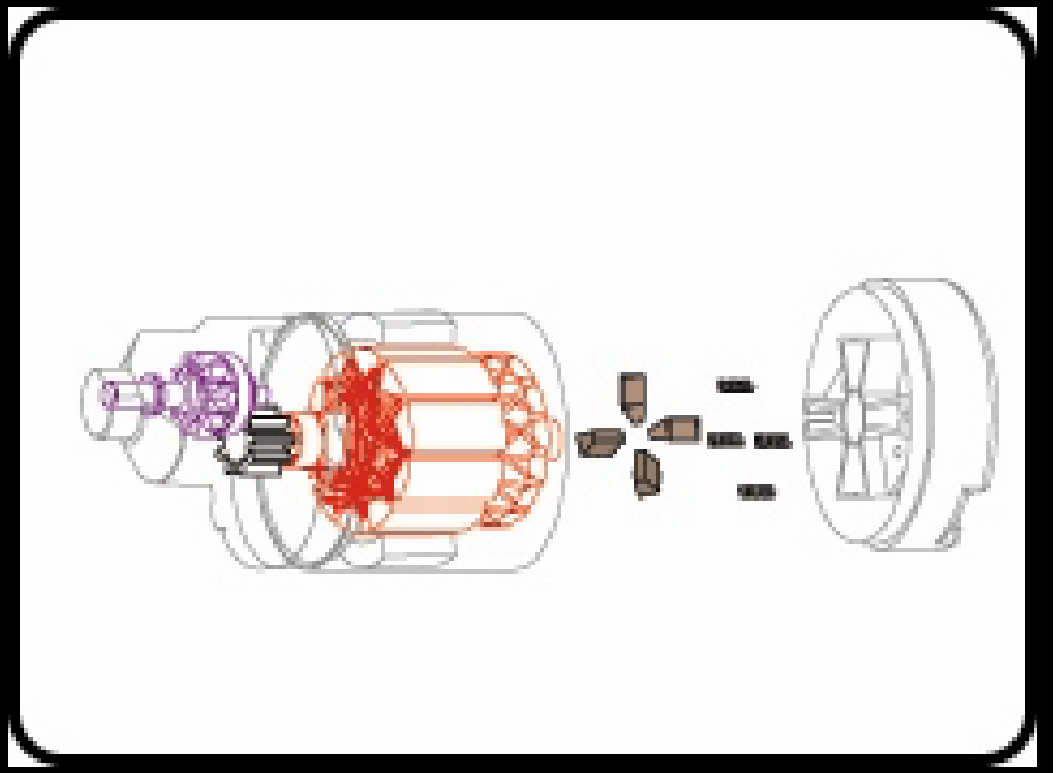
Each of the two **red** wires should show 8.5-10 Volts A.C. to ground.



Electric Starter

The starter motor used on the 4P90 engine is a permanent magnet DC motor:

The brushes and brush holder are mounted to the end cap and the rotor will ride on top of them.



Rebuilding the Starter

Match-mark the end cap and the gear-reduction drive to the magnet housing before disassembling the starter.

P90 Engines

26 C.I.D. (420cc) Displacement

Pressurized lube to the crankshaft

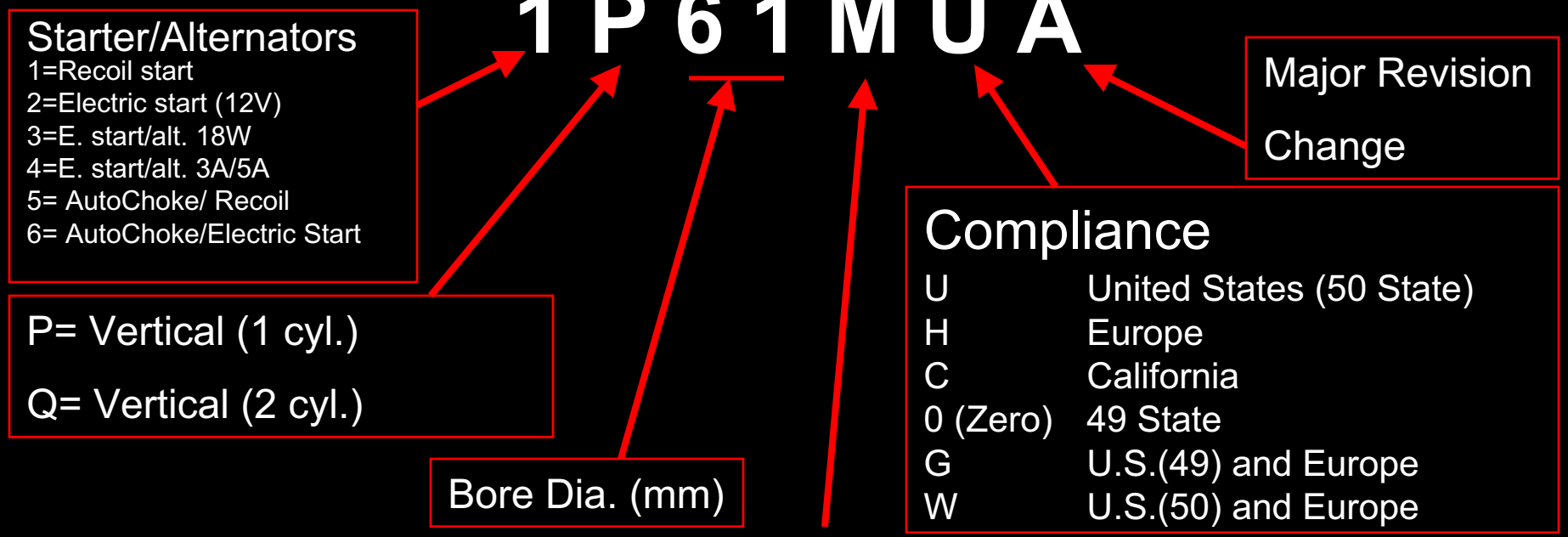
Balance shaft

Power output:
more than sufficient.

Model #: 4P90MO

MTD Engine Updates

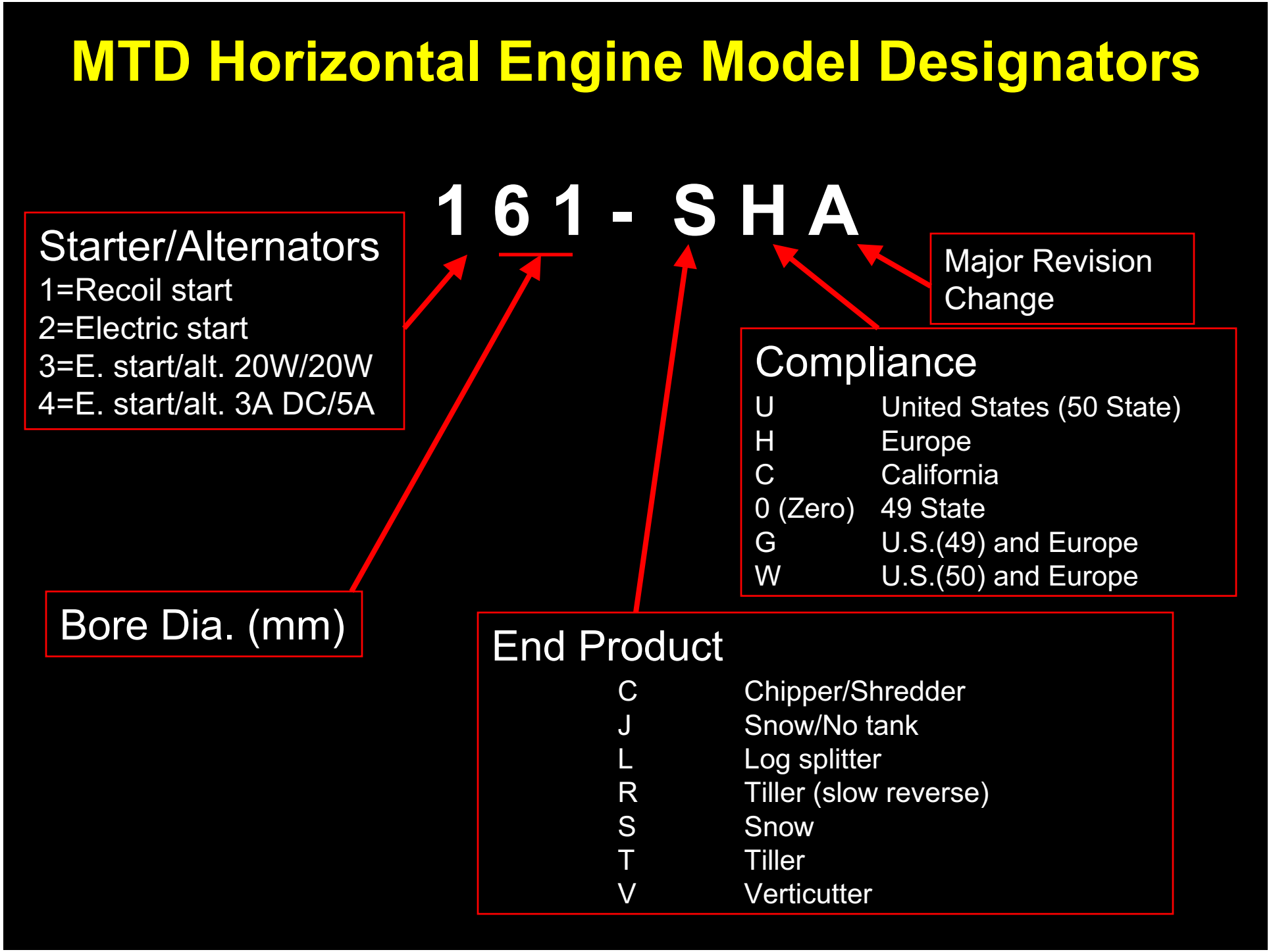
MTD Vertical Engine Model Designators



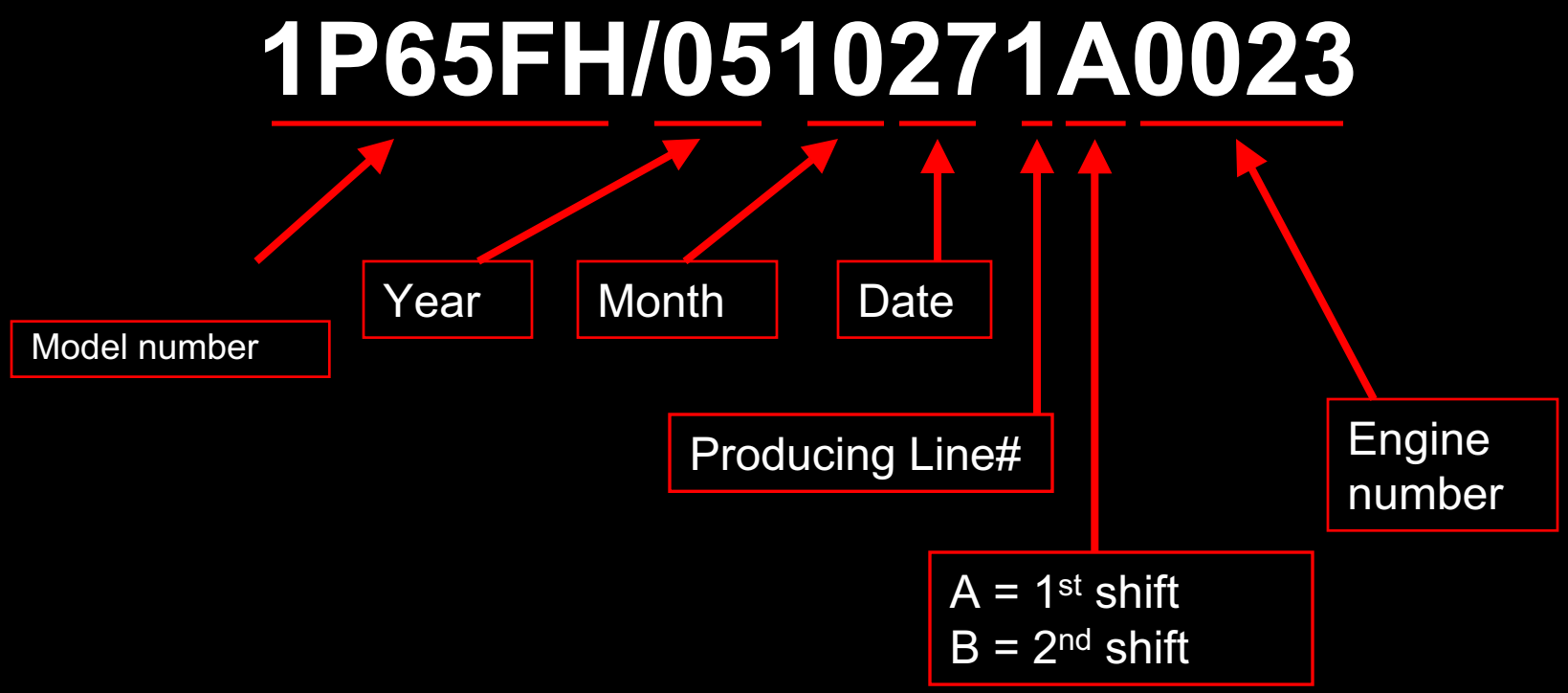
End Product

B	Mower (long shaft M0)		
C	Chipper/Shredder	M	Mower (long shaft/no shroud)
D	Mower (long shaft M1)	N	Mower (short shaft M0)
E	Mower (short shaft M1)	P	Mower (long shaft M0)
F	Mower (short shaft/no shroud)	Q	Mower (short shaft M0)
I	Mower (long shaft/M0)	T	Tiller
L	Log splitter	W	World Tiller

MTD Horizontal Engine Model Designators



MTD Engine Serial Numbers



Big Bore Engines

MTD GENUINE FACTORY PARTS DIRECT

MTD Products Inc - Product Training and Education Department

178-***

- A summer version of the 478 snow engine is available for select chore performs this year.
- A log splitter version will have a fuel shut-off valve the same as all of the other MTD log splitter engines.
- The differences between the summer and winter versions of these engines are:
  - Air intake/carburetors
  - Exhaust

Air Filter

- The air filter for the big bore summer engines:
- Has a paper element with a foam pre-filter
- Has a round hole in the underside that fits around a round riser in the air filter housing base.

Exhaust

- The exhaust system for the summer version of the 178 engine is a simple muffler.
- A spark arrestor is available as an option for this engine.

New Fuel Filters

Old fuel filter

New fuel filter

Same part number and micron rating for both filters.

UPDATE

Electric Start

- Since the beginning of June, 2005 Engines used on some mowers equipped with the electric start feature are no longer being equipped with a stator to recharge the batteries
- A charger is equipped with the mower and will be needed to maintain an adequate charge to the battery pack

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New Electric Starter

The 2P70 has a new electric starter which is:

- Smaller
- Lighter
- Stronger
- Faster

Spark Plugs

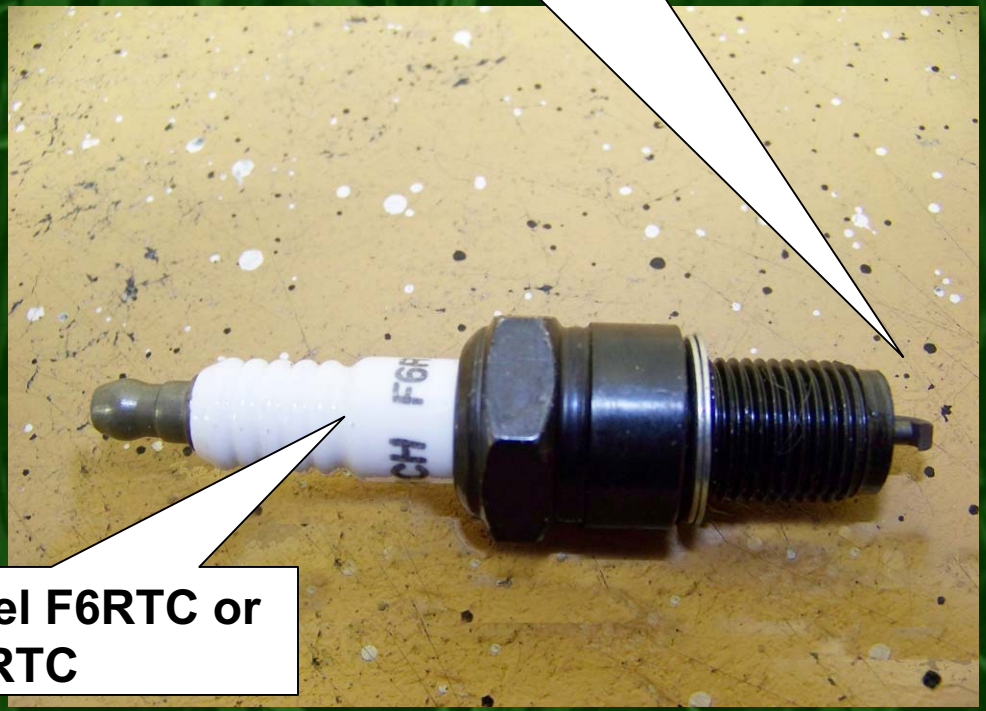
The **ONLY** plug that is EPA approved for the MTD engine is the F6RTC.

NOTE: MTD now gets these plugs from a couple of different suppliers

UPDATE

Maintenance

ONLY TORCH SPARK PLUGS



Torch model F6RTC or F7RTC

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Diagnosis: Fuel, Air, Compression, Spark

Correct spark plug is:

Torch F7RTC or F6RTC There are no alternatives that have been tested and are proven to perform as an equivalent.

Visual examination of the spark plug: “read” the plug for indications of lean running, rich running, overheating, electrode erosion, oil fouling.

It is not practical to visually check the spark at the gap on a resistor plug: most spark orange.

Maintenance: Valve Lash

The engine may run for many years before valve lash adjustment is needed.

To check valve lash:

- Disconnect and ground the H.T. lead
- Remove the spark plug
- Remove the valve cover

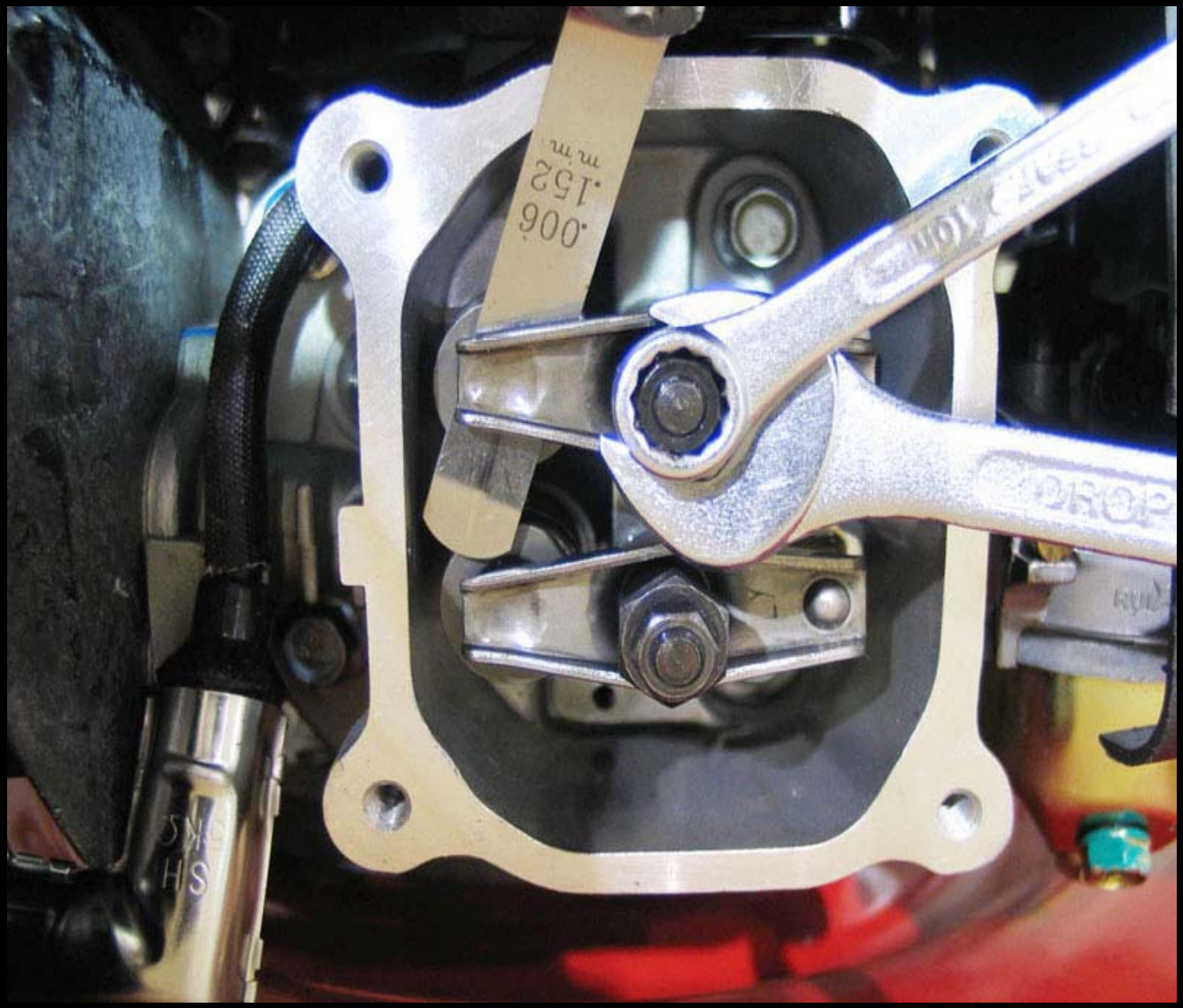
Maintenance: Valve Lash

Confirm that the piston is at Top Dead Center on the Compression stroke:

- Piston at top of travel
- Both valves should be closed

Maintenance: Valve Lash

- Adjusting nut (fulcrum): 14mm wrench
- Jam nut: 10mm wrench
- Intake valve: .005”-.007” (.13mm-.17mm)
- Exhaust valve: .007”-.009” (.18mm-.22mm)

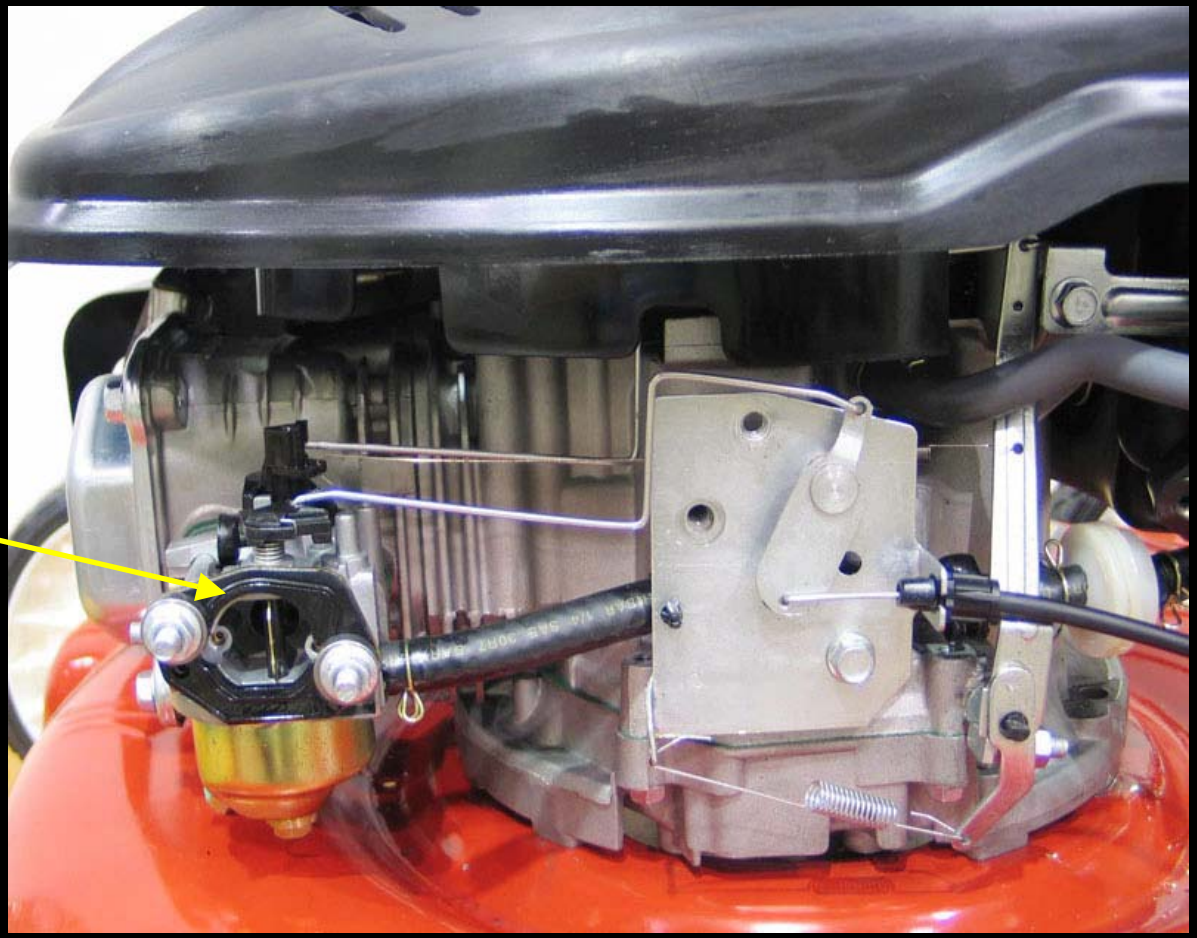


Diagnosis: Fuel, Air, Compression, Spark

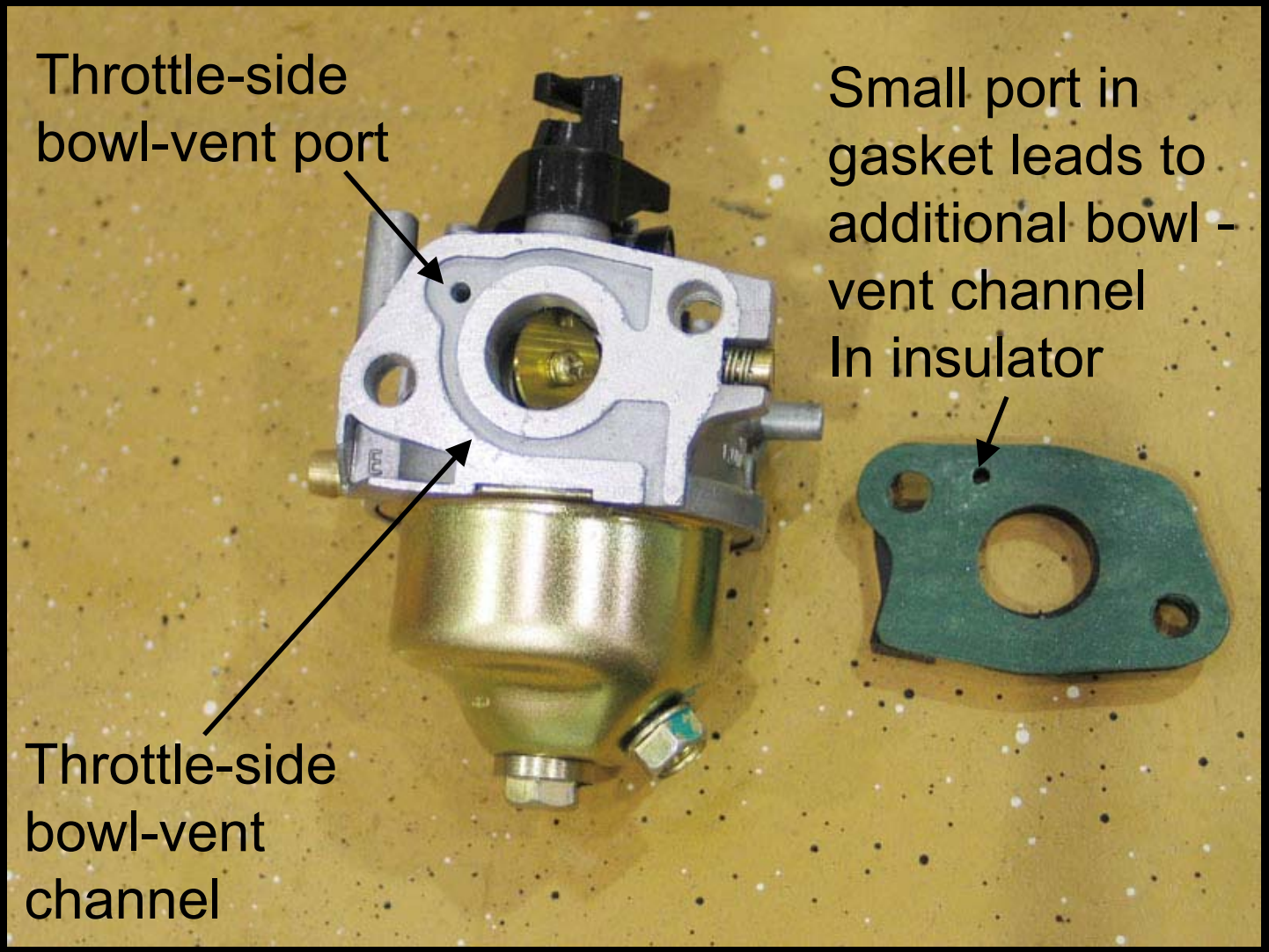
Most discussions (and issues) of fuel and air involve the carburetor, and the correct mixing of the two fluids.

NOTE: Steel/rubber gasket is embossed with a bowl-vent channel.

Bowl vents on choke and throttle end

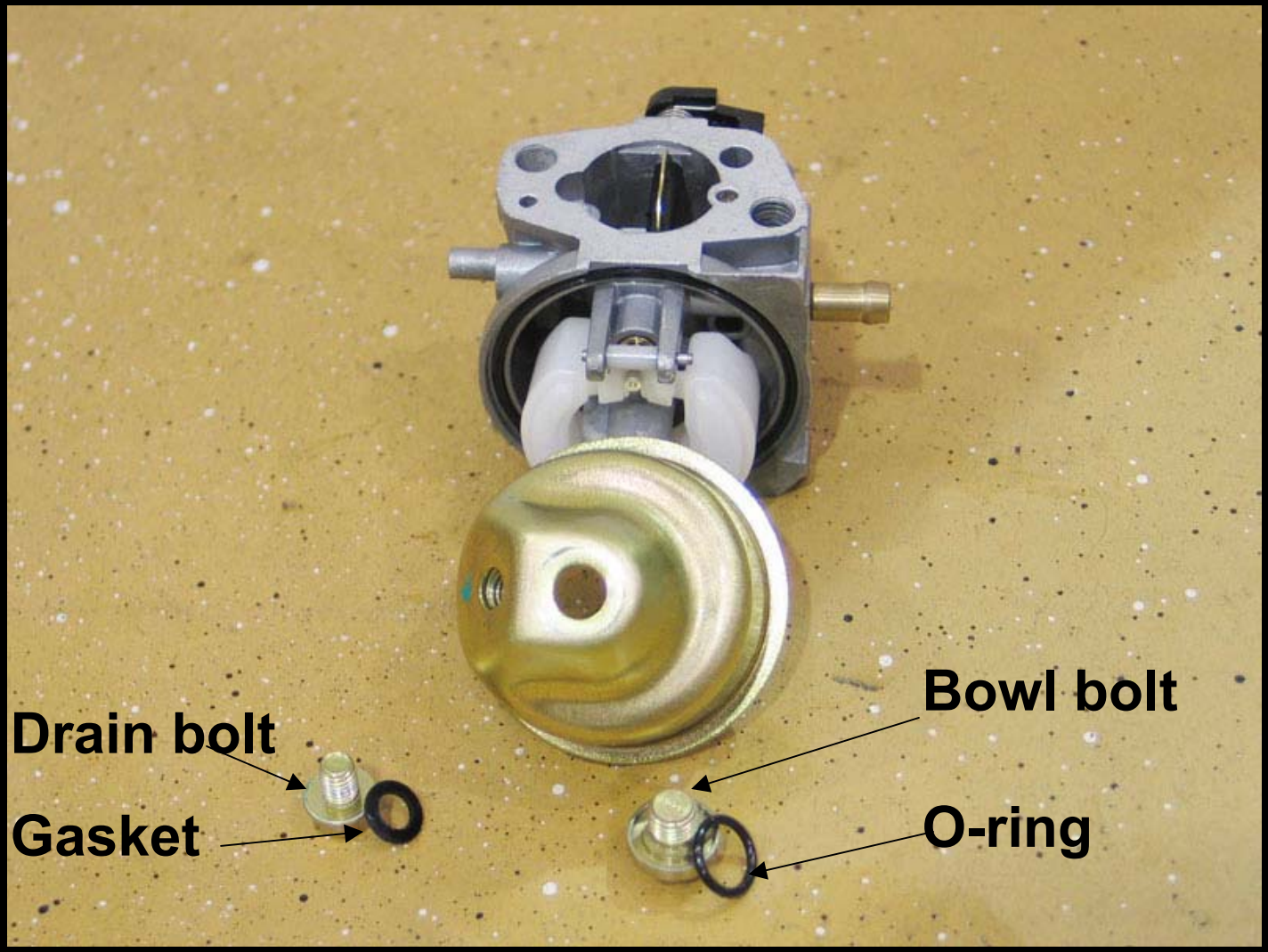


Fuel System


Throttle-side
bowl-vent port
Small port in
gasket leads to
additional bowl -
vent channel
In insulator
Throttle-side
bowl-vent
channel

Fuel System

The bowl comes off easily

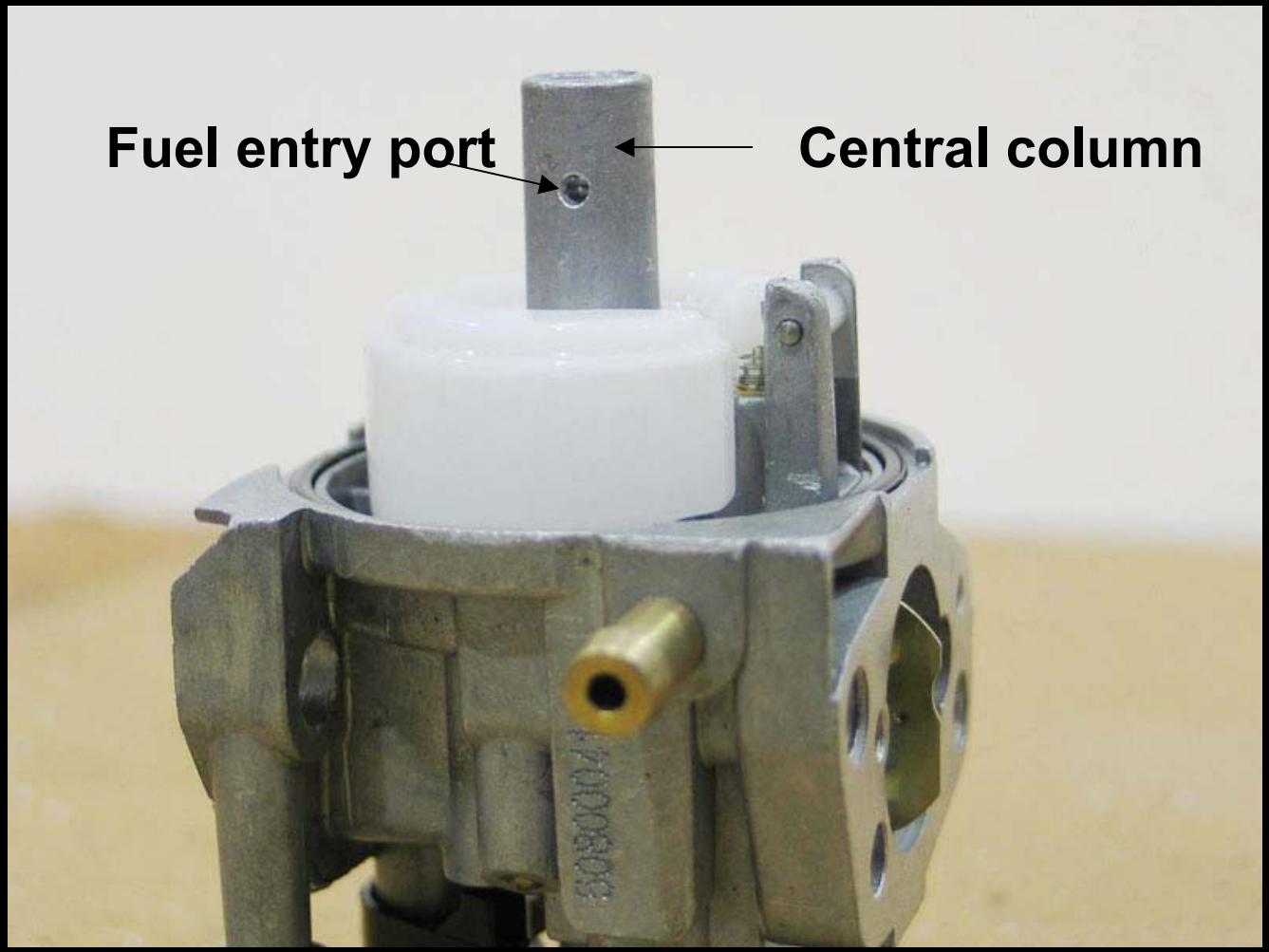


Fuel System

The float should sit level, though it is not readily adjustable.

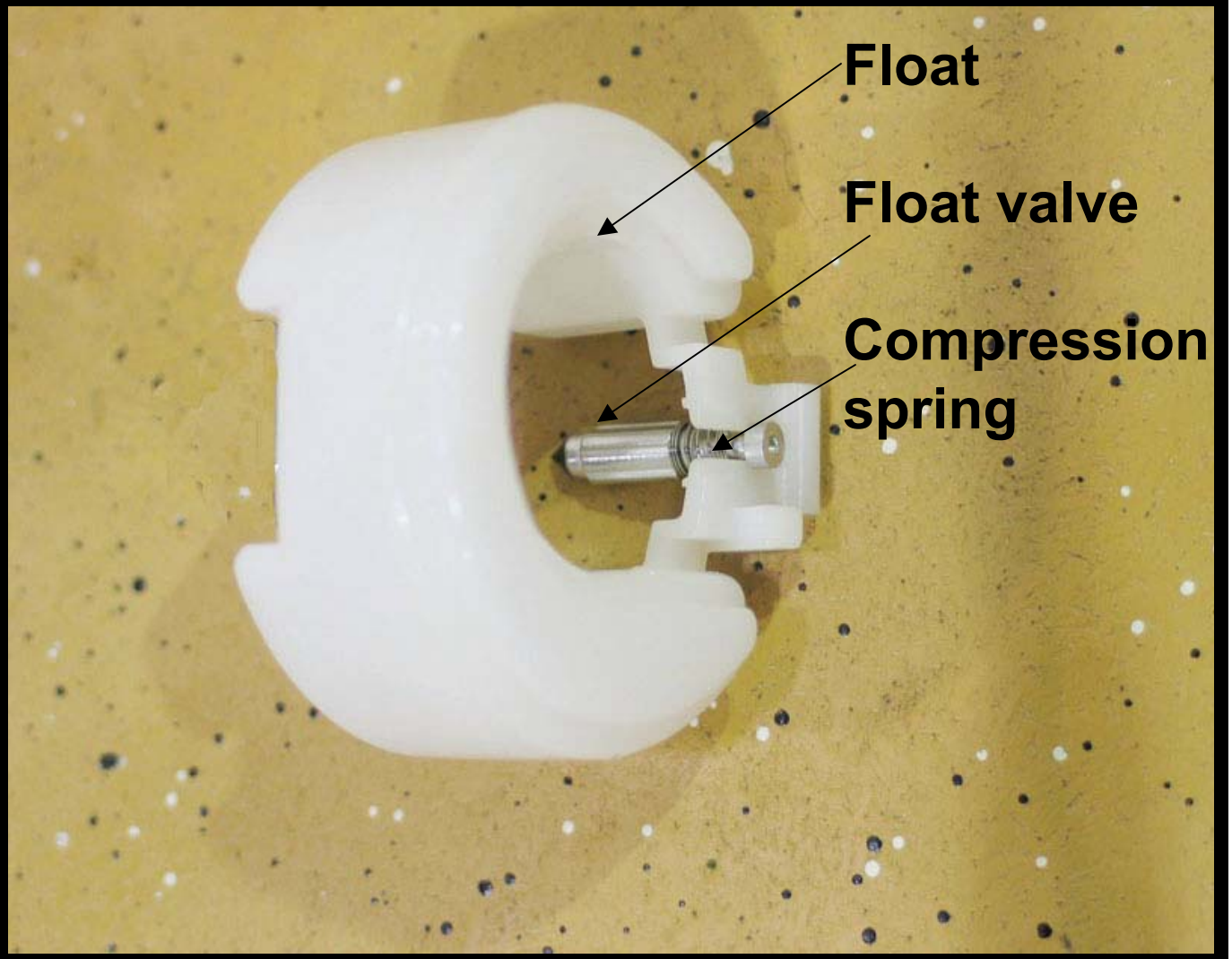
Note that the fuel entry port in the central column is well above the bottom of the bowl.

This makes the carburetor fairly resistant to sediment and water.



Fuel System

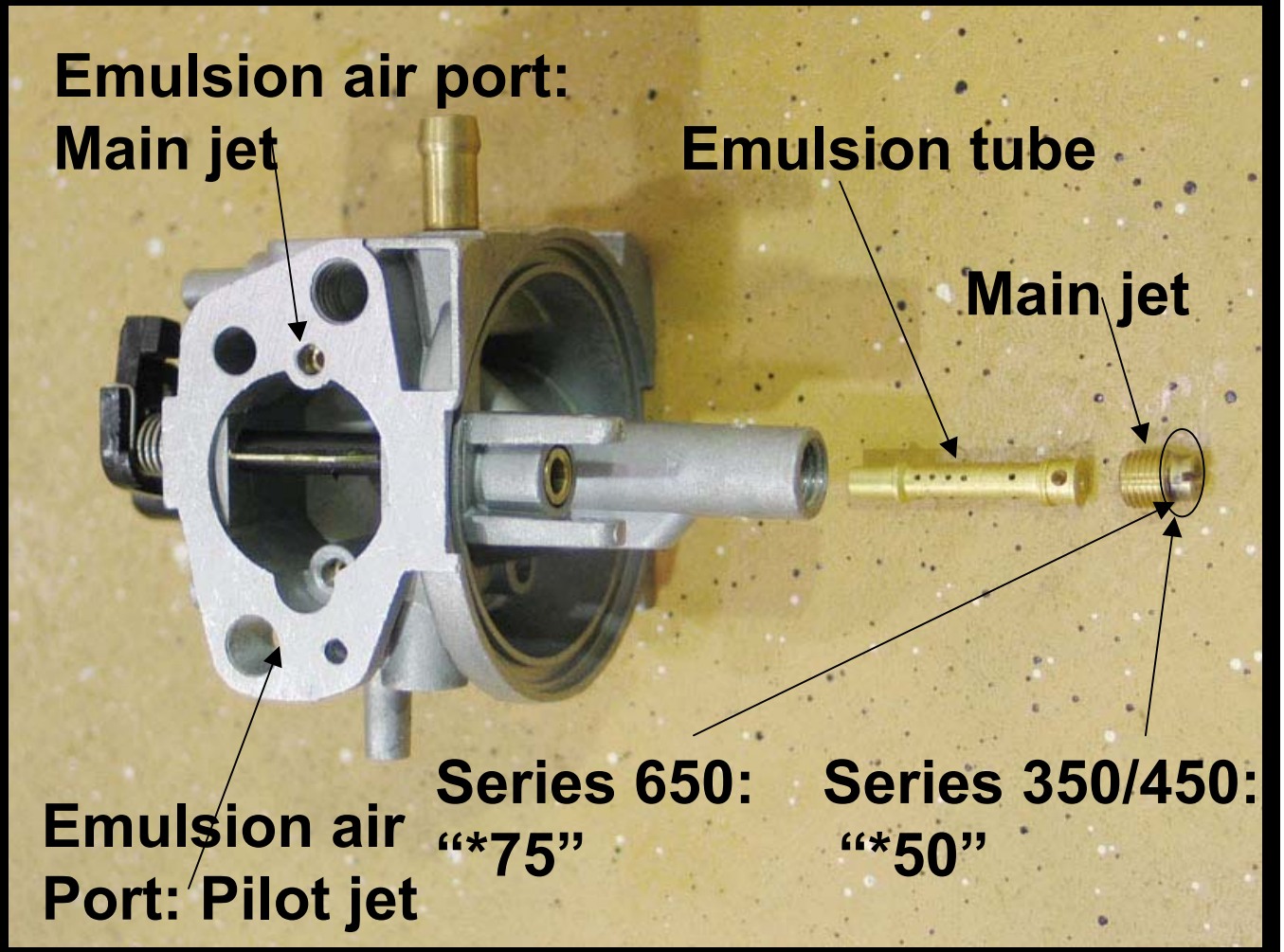
The tip of the float valve and the compression spring are both subject to wear, and should be replaced when the carburetor is disassembled for cleaning.



Fuel System

The main jet screws into the central column, retaining the emulsion tube.

- Main jets on the Series 650 bear a “*75” marking
- Main jets on the smaller engines bear a “*50” marking

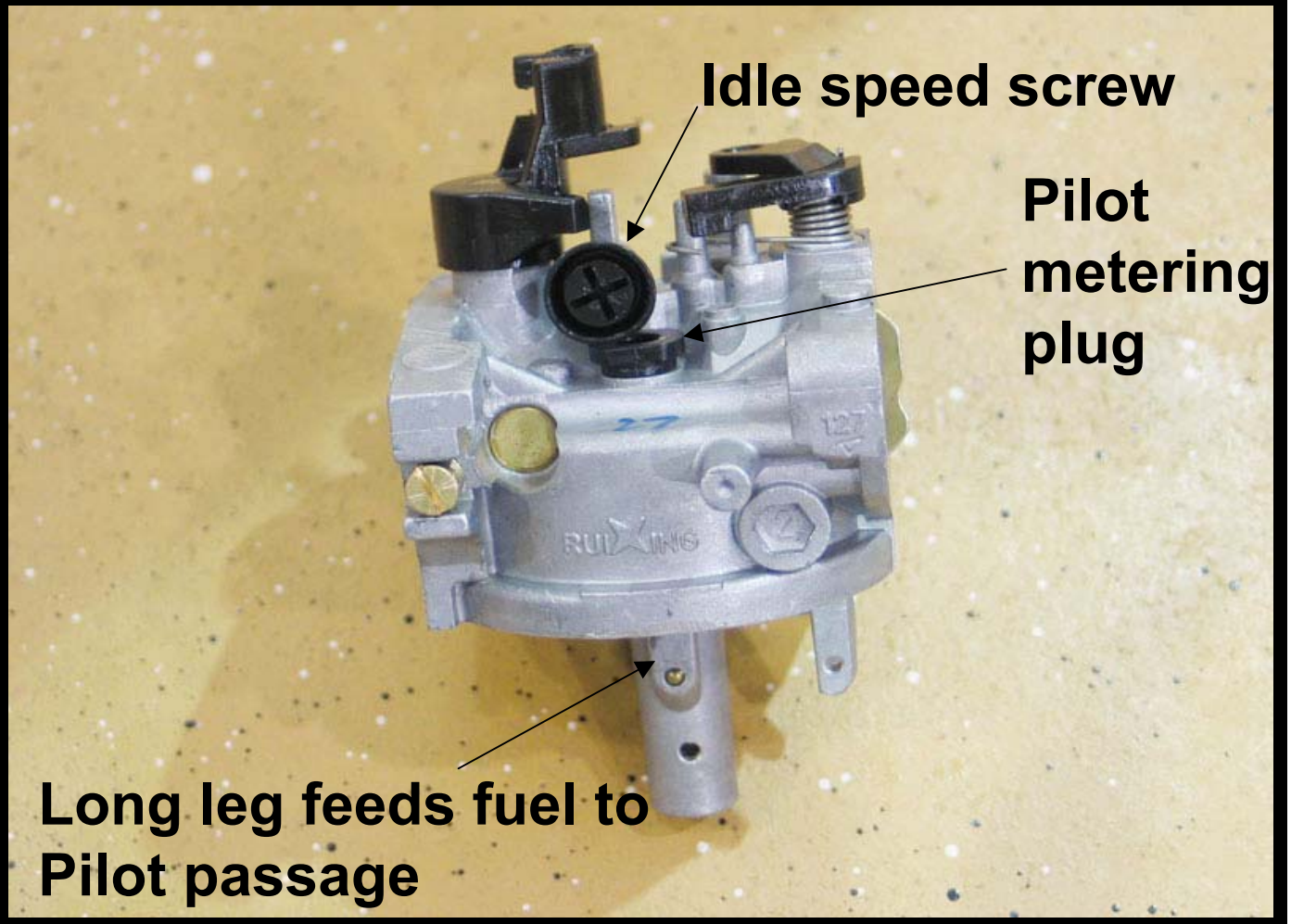


Fuel System

The lip of the idle speed screw retains the pilot metering plug.

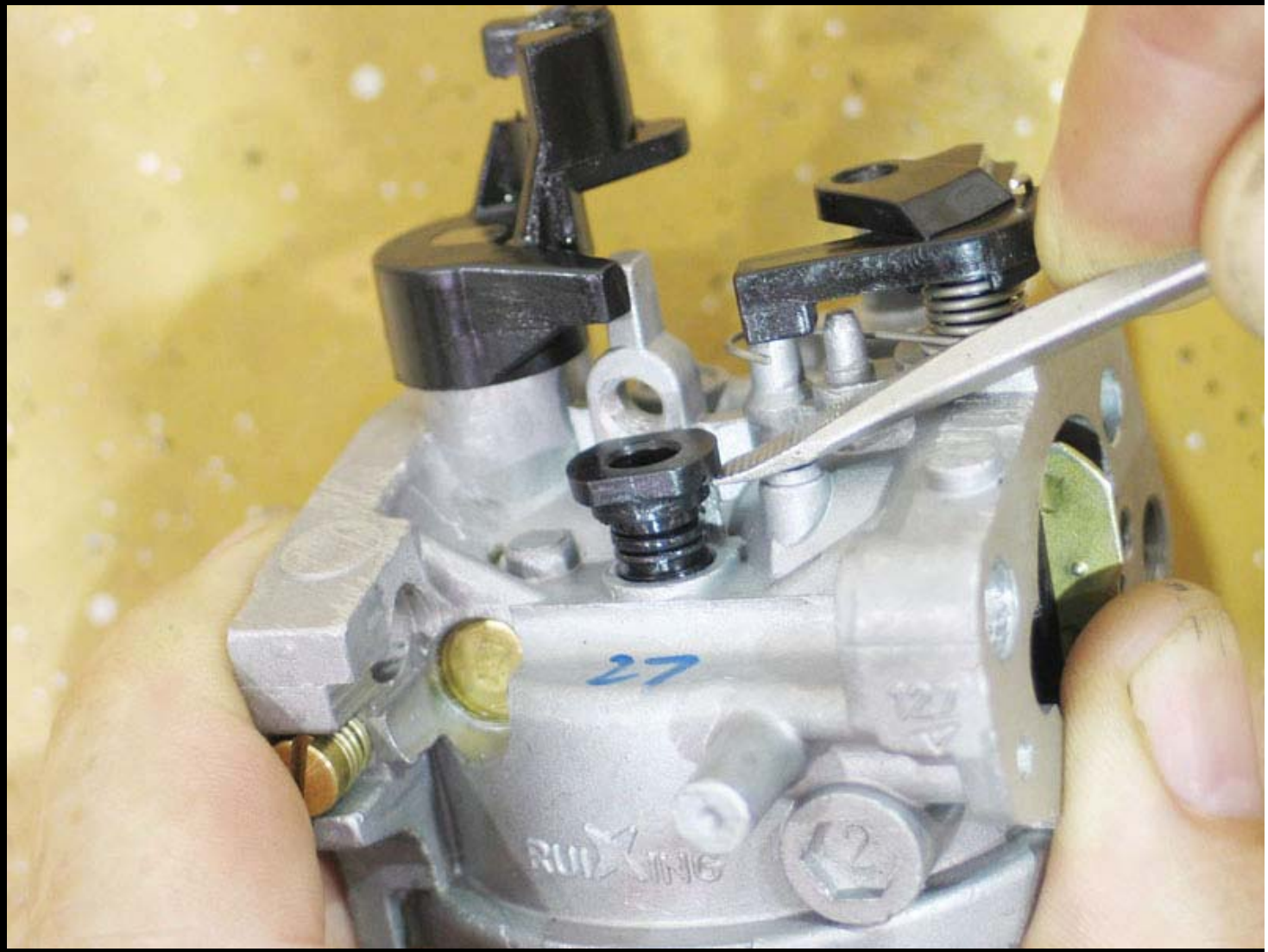
The long leg to the central column supplies fuel to the pilot passage.

The shorter leg on the fuel-inlet side feeds air to the emulsion tube.



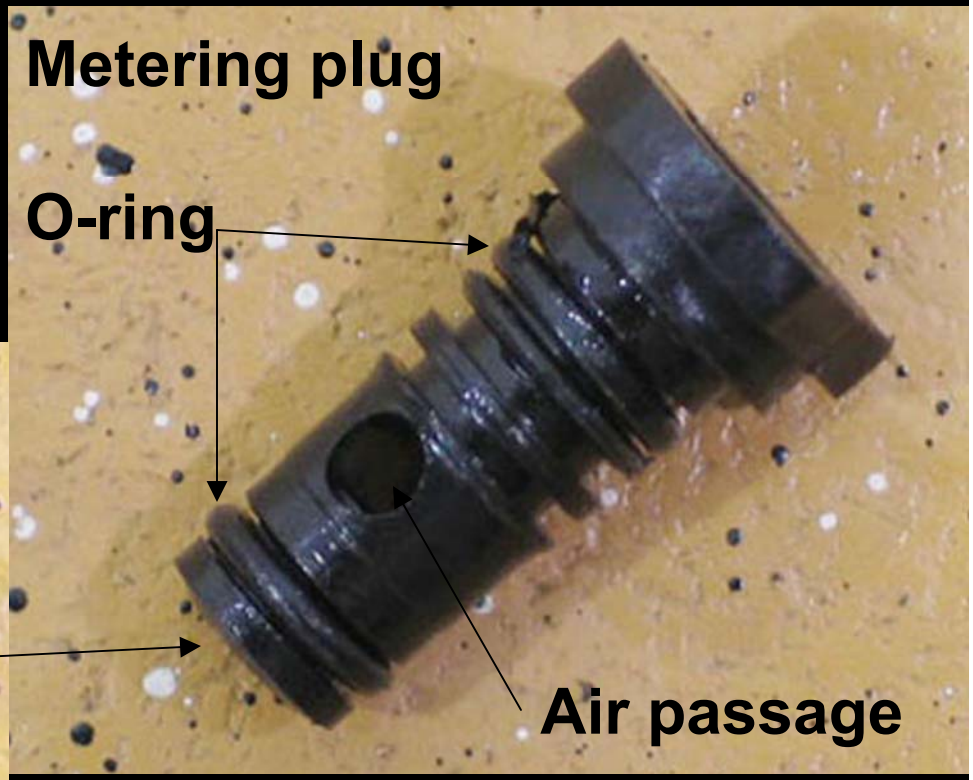
Fuel System

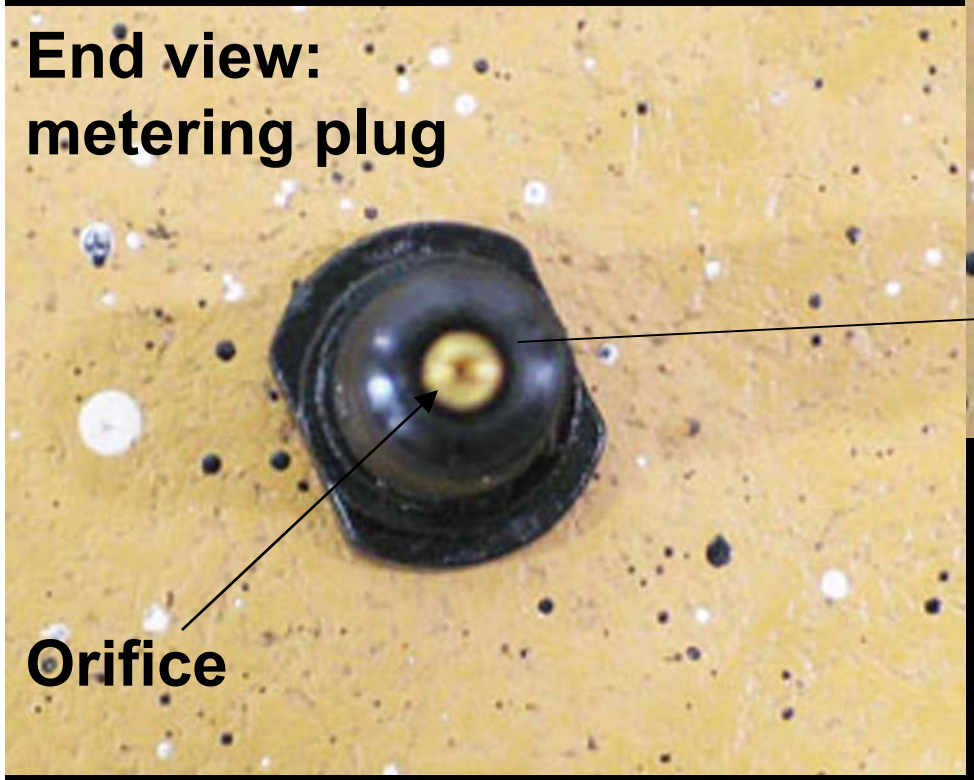
The metering plug can be carefully pried-out of the carburetor body.



Fuel System

The metering plug contains a small metal orifice that regulates fuel flow.

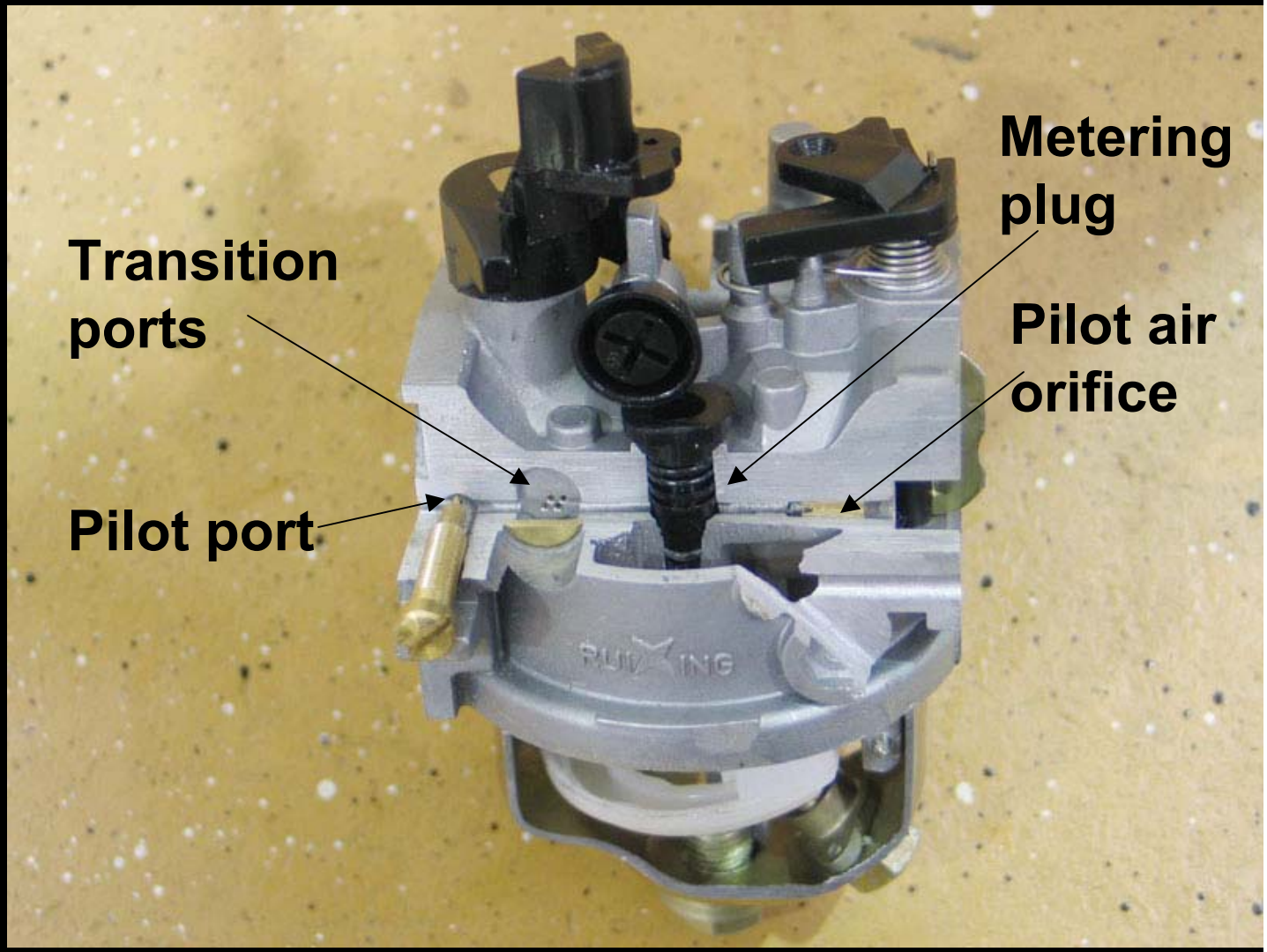




Air flow is regulated by the orifice in the emulsion air port.

Fuel System

- Fuel and air meet at the metering plug
- From there they feed the transition ports
- Further down-stream is the pilot port



Hunting and Surging

An engine will hunt and surge if there is a lean fuel/air mixture or if the governor is over compensating.

When diagnosing an engine that hunts, use the carburetor check sheet.

REMEMBER: There is no cookie cutter answer for an engine that hunts and surges, everything must be checked on every engine.

Things to check for on an engine that hunts and surges:

- ½ tank of fuel
- Check the governor
- Check for binding linkages
- Missing or damaged springs
- Check for air leaks
- Check the valve lash
- Check the fuel filter
- Check the fuel/test for alcohol
- Remove the carburetor

E15 Gasoline

http://www.epa.gov/otaq/regs/fuels/additive/e15/

E15

NOT for use in outdoor power equipment.

Symptoms

- Very hard starting
- Hunting and surging
- Corrosion in the carburetor
- Blown head gaskets
- Overheating

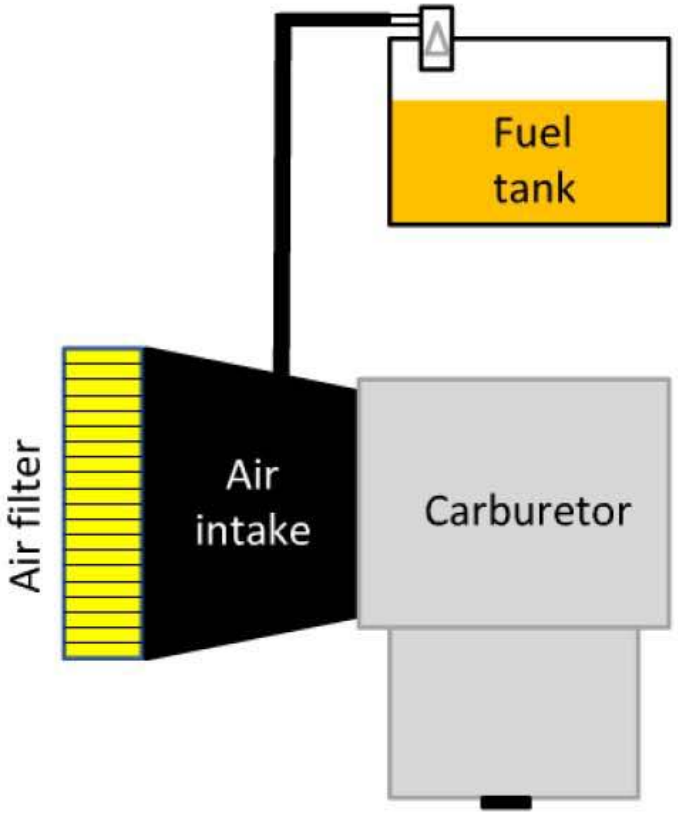
NOT Warranty

EVAP System

- All engines that are 225 cc or bigger built on or after January 1, 2011 will now have to meet a new evaporative emission standard.
- MTD has a simple system that meets this new standard.
  - The system is the same from lawn tractors to chore performers.

EVAP System

- The fuel cap is not vented.
- The vapors are drawn into the engine via a hose that goes from the roll over valve in the fuel tank to the air intake manifold.



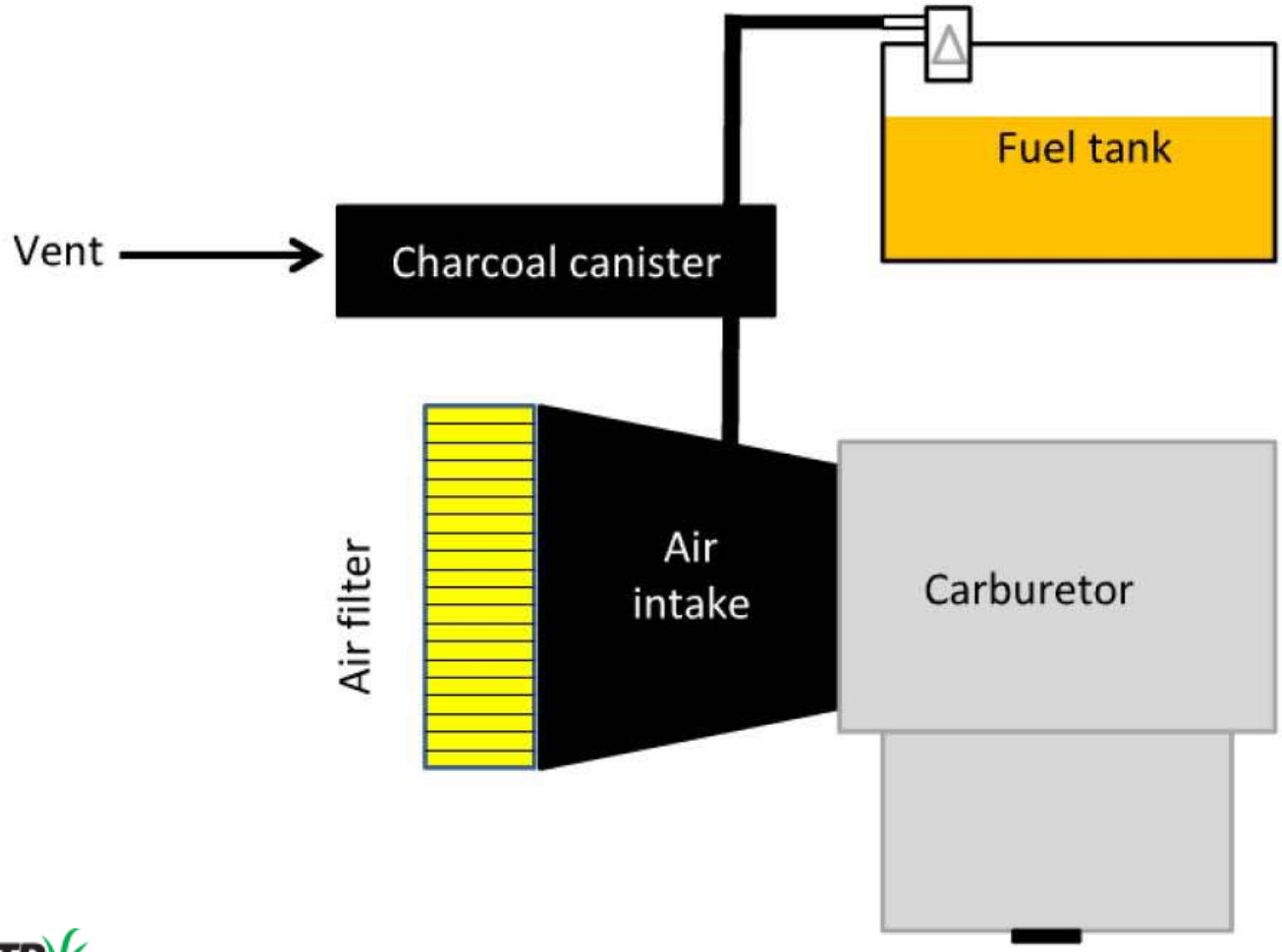
EVAP System

- The fuel tank will run with a slight vacuum.
- The fuel tank is high enough that the head pressure will overcome the vacuum.
- A dirty air filter can cause the engine to run like the vent is plugged.
- A leak in the system will result in dirt ingestion.

California EVAP System

- A charcoal canister is required for engines operated in the state of California.
- In this system, the fuel tank vents through the charcoal canister.
- The charcoal will grab some of the hydrocarbons in the air venting from the fuel tank.
- As the engine is running, the hydrocarbons are sucked out of the charcoal and drawn in to the intake air of the engine.
  - The system is the same from lawn tractors to chore performers.

California EVAP System



California EVAP System

There are four failure modes:

- A leak in the system - will allow dirt ingestion.
- A blockage in the system (between the canister and the fuel tank) - acts a plugged vent.
- A blockage in the system (between the canister and the control panel) - The canister can not purge its vapors.
- Charcoal canister poisoned (raw fuel in the canister) - prevents the canister from absorbing fuel vapors.

NOTE: The only failure mode that will affect the operation of the engine in a way the operator will notice is a blockage in the system.

MTD GENUINE FACTORY PARTS DIRECT

UPDATE

Fuel System 1

49-state compliant tractors have roll-over valve fuel tank vents.

This is what they look like.

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UPDATE

Fuel System 2

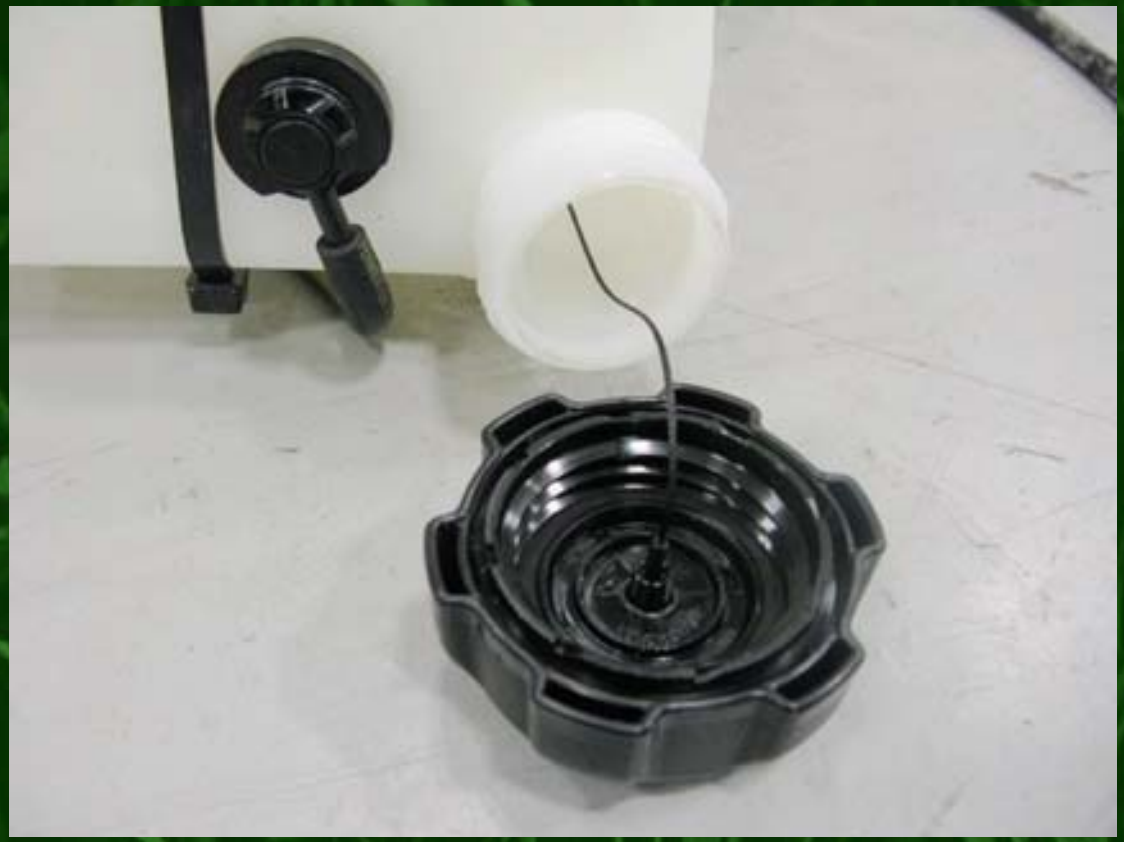
49-state compliant tractors have roll-over valve fuel tank vents.

This is the other end of the vent line.

MTD
For A Growing World.

UPDATE

Fuel System 3



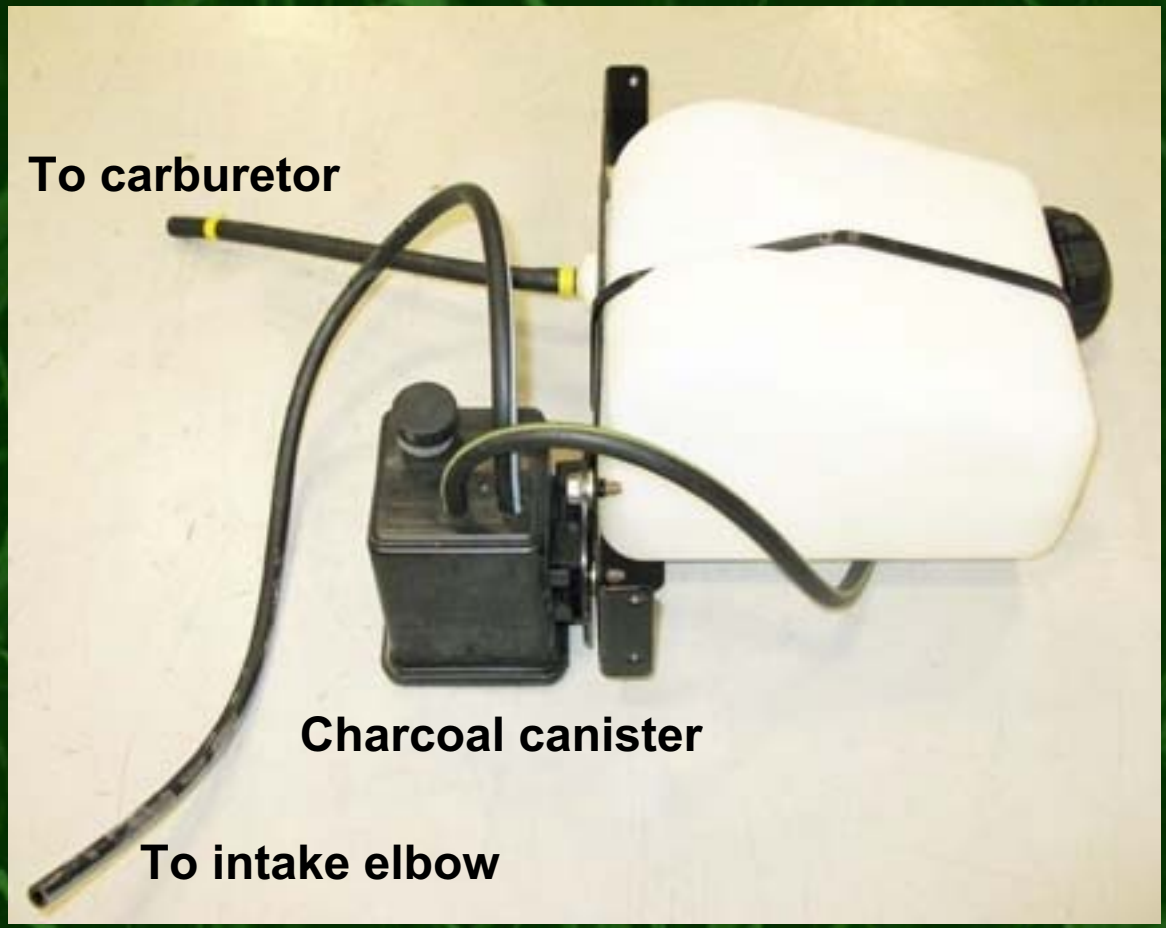
Tethered fuel caps:

EPA phase-3 compliance includes tethered fuel caps.

MTD
For A Growing World.

UPDATE

Fuel System 4



California compliant tractors have roll-over valve fuel tank vents and charcoal canisters.

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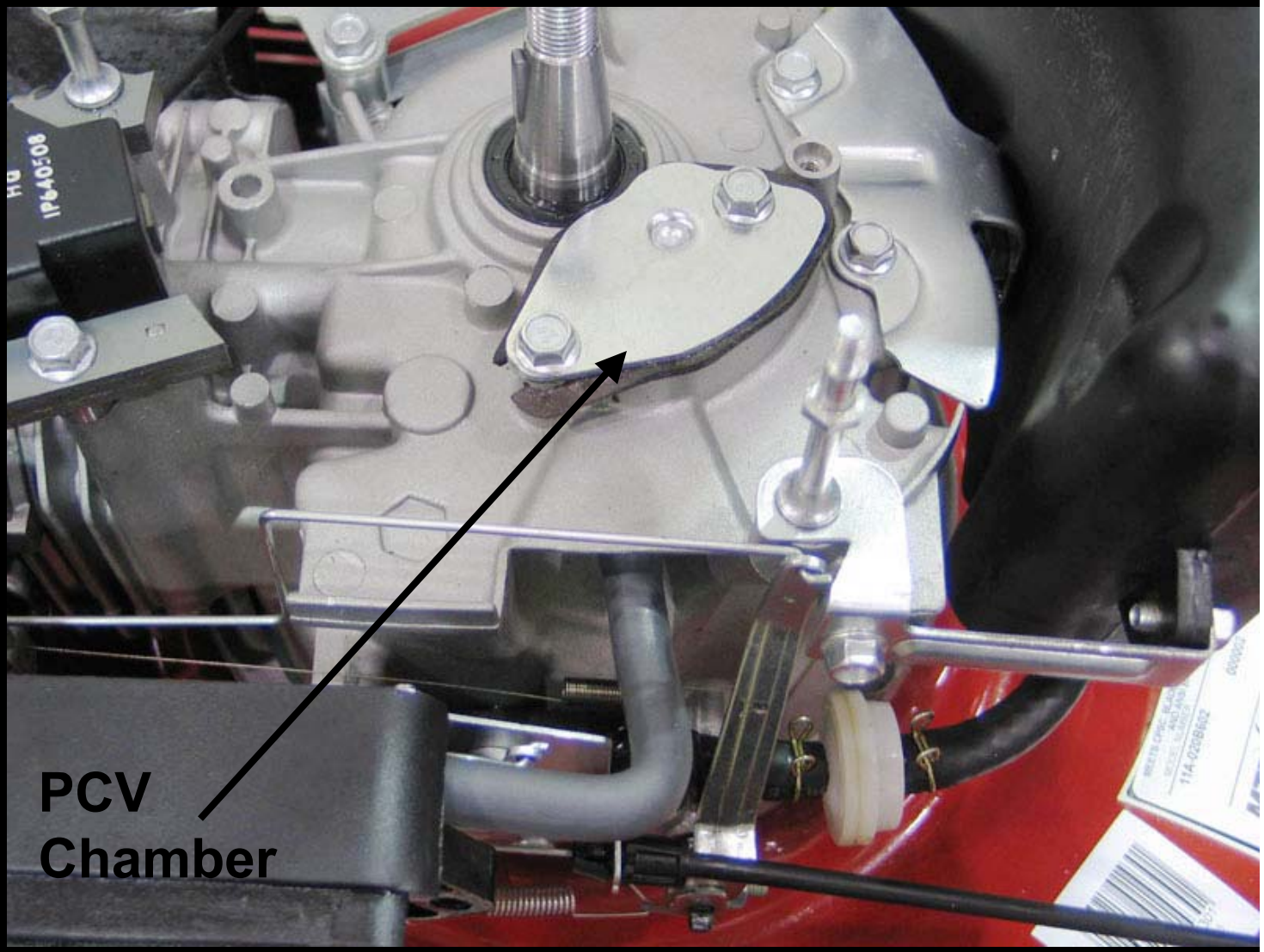
For A Growing World.

PCV System

The PCV chamber is located under the flywheel



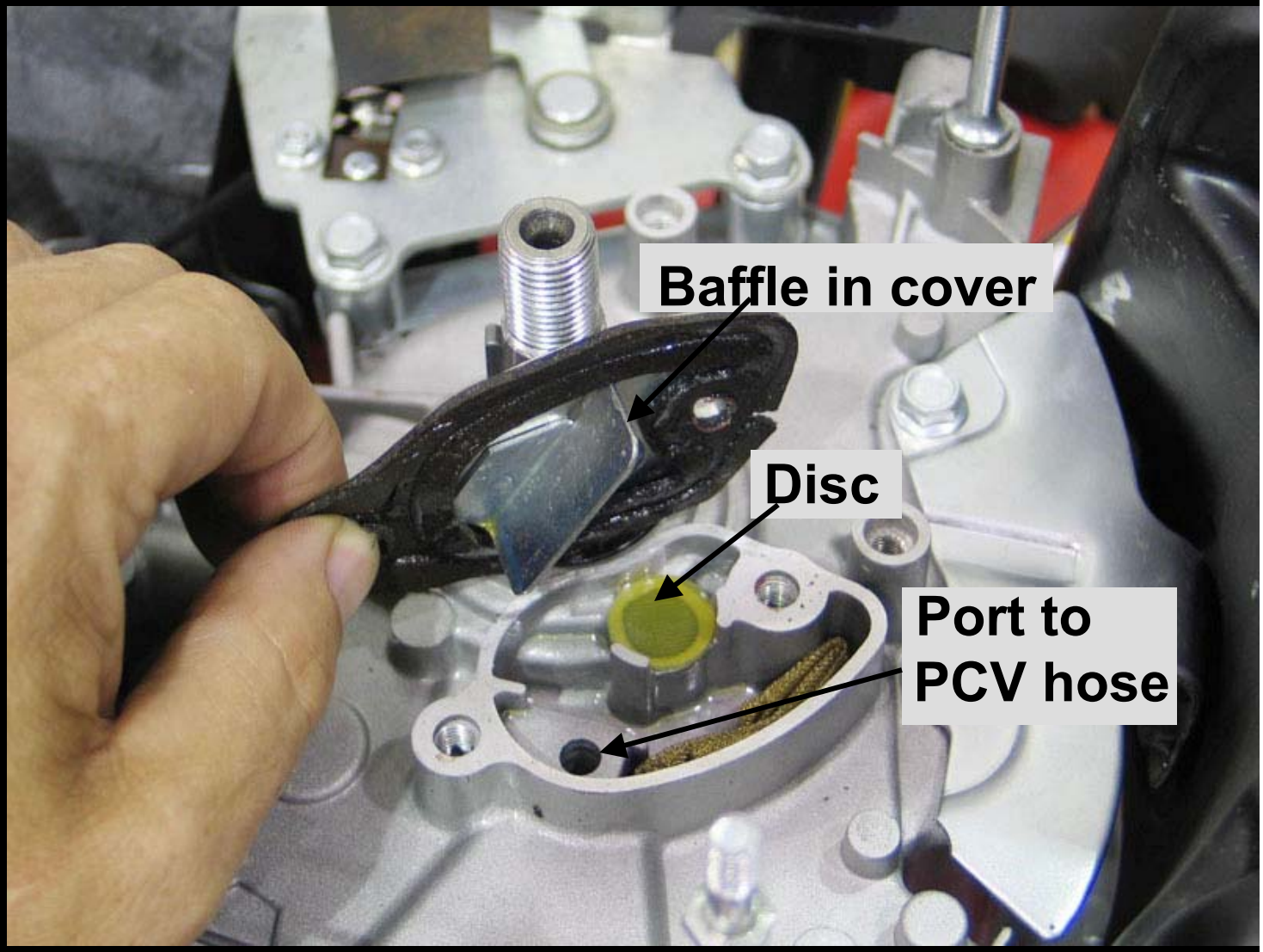
PCV System

Within the PCV chamber:

A baffle works to separate the oil from the air

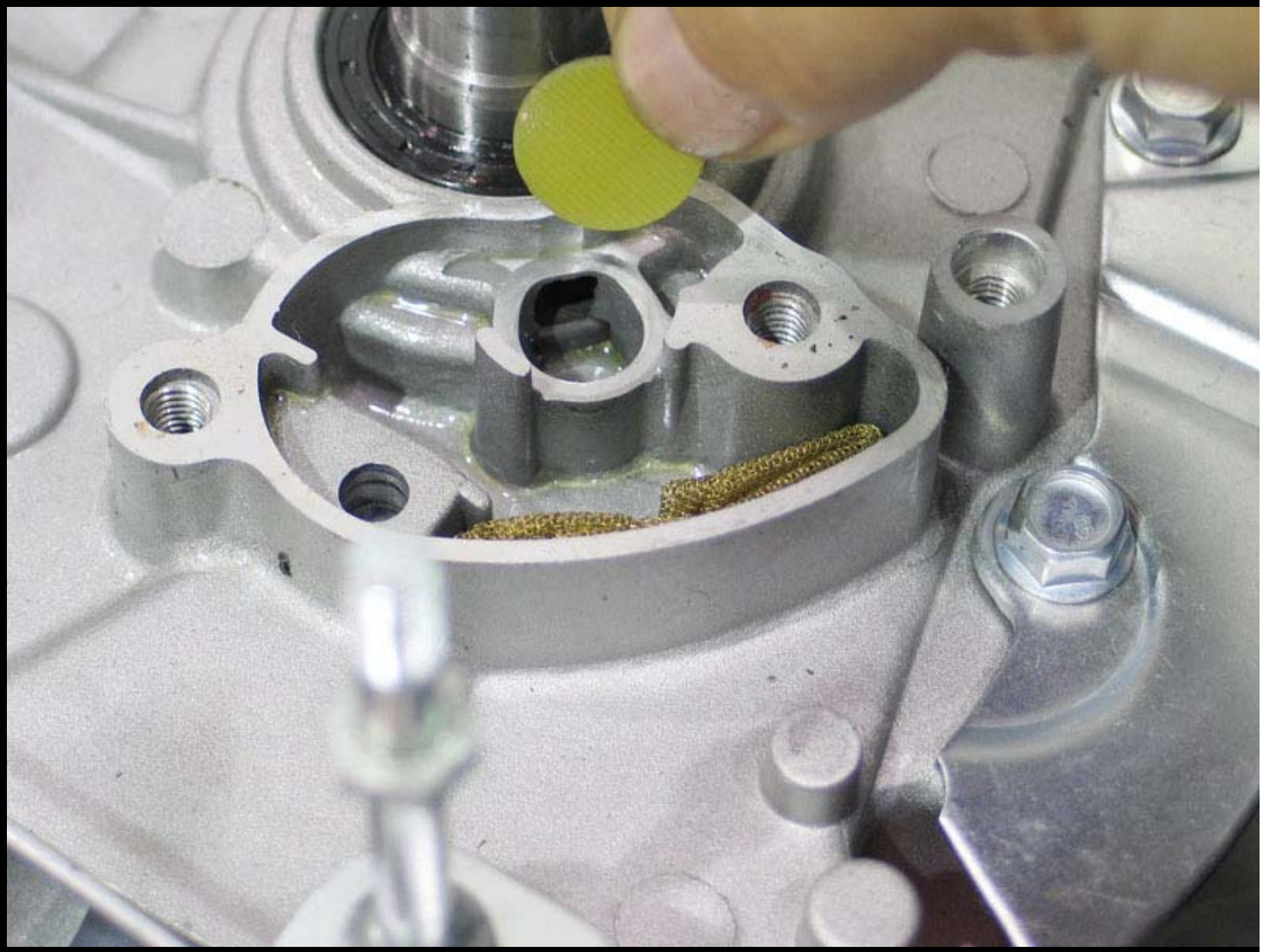
A disc covers the port that leads to the crankcase, acting as a check valve

A port high in the chamber passes pressure pulses to the PCV hose



PCV System

The disc is kept in place by bosses around the port, and a dimple above it, in the PCV chamber cover.

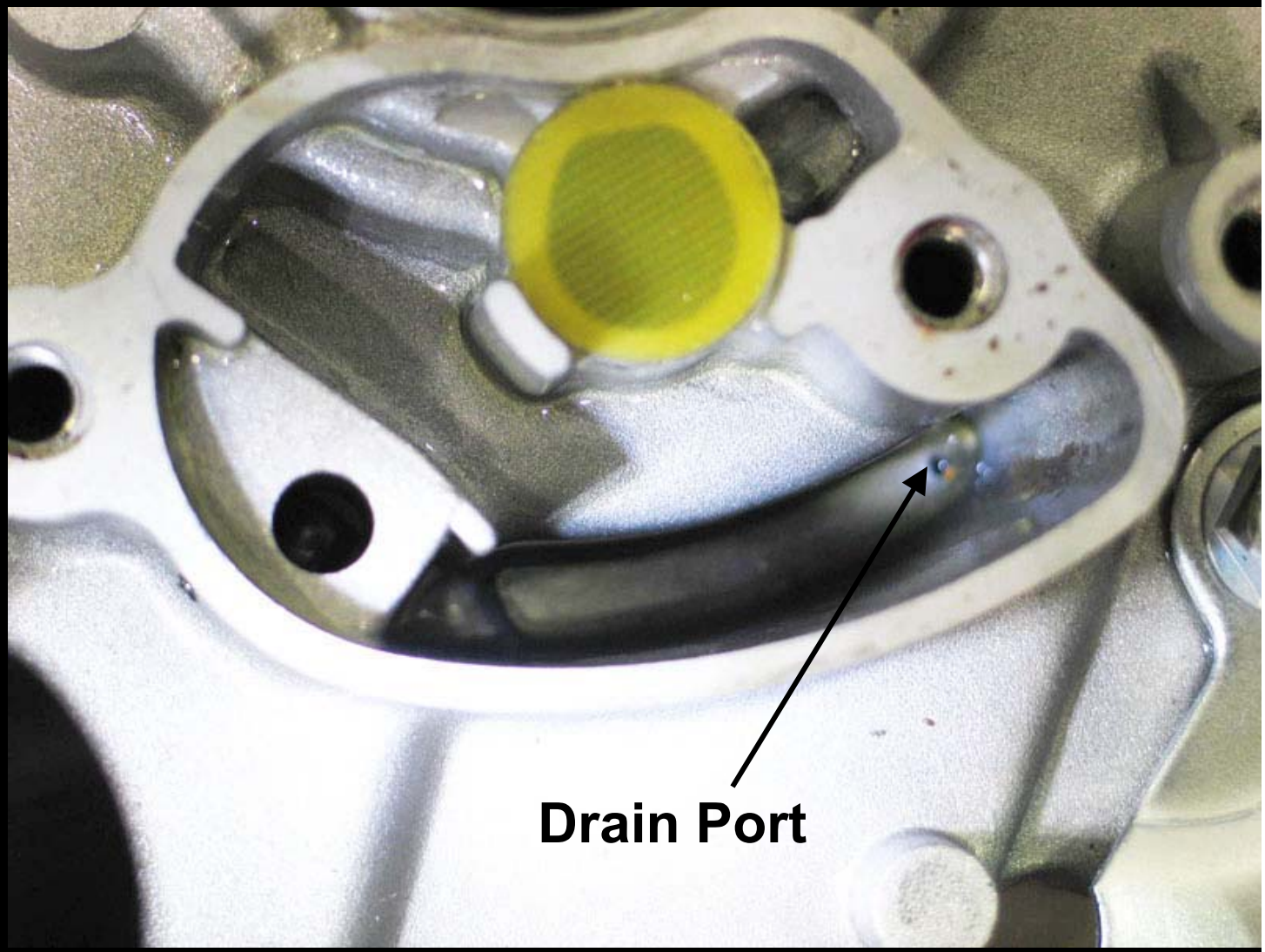


PCV System

- Folded mesh screen within the chamber captures the oil mist
- Oil accumulates in the screen and drips to the bottom of the chamber

PCV System

A drain port under the screen allows de-aerated oil to drip back into the crankcase.



UPDATE

Operator Controlled Reverse

Dash Panel Key Switch

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This system will eventually be installed on all our riders

UPDATE

Sorting-out the alphabet soup:

In Cub Cadet, it is called “Revtek”, with OCR Technology

Troy-bilt, they call it “Reverse Mowing Control (RMC) with OCR Technology”

In Yard Man, they just call it “OCR”

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UPDATE

Featuring: a safe way to mow in reverse

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Operator Controlled Reverse

UPDATE

How does it work?

1. Start unit normally
2. After unit is running turn key to position #2, this was the former headlight position
3. Press OCR button (Triangle shaped indicator)
4. The OCR button will light up, giving you visual confirmation that you will mow in reverse

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Operator Controlled Reverse

The unit will mow in reverse until 1 of 3 things happen:

1. The operator leaves the seat
2. The engine is turned off
3. The key is turned back to the normal mow position (Position # 3)

UPDATE

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UPDATE

Operator Controlled Reverse (OCR)

Revised ANSI Standard B71.1 taking effect September 1, 2004 states -

"A means shall be provided that prevents reverse drive operation at a ground speed greater than 1 ft/sec. with powered blade(s). An override capability may be provided to permit reverse drive with powered blades temporarily. If an override capability is provided, it shall automatically reset when one or more of the following actions occurs:

(1) The blade(s) is (are) re-engaged or

(2) The engine is restarted or

(3) The directional (key) control is moved from reverse position."

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UPDATE

The RMS module is a separate component from the key switch. It is potted, and contains a logic board

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UPDATE

OCR™
NO CHILDREN AROUND
REVERSE PUSH BUTTON
REVERSE CAUTION MODE
STOP
NORMAL MOWING
Mow in reverse only when needed and no children are around.
How Does It Work?
1. Turn key from "Normal Mowing" to "Reverse – Caution Mode."
2. Press triangular button.
3. Light indicates you can mow in forward and reverse.
4. Look behind before mowing in reverse.
5. Only operate in "Reverse – Caution Mode" as needed.
6. All other times operate in "Normal Mowing" mode.
"Reverse – Caution Mode" is turned off when:
- Key is returned to "Normal Mowing" mode
- Engine is turned off

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UPDATE

The electrical system is largely conventional, other than the RMC module.

The next section is an over-view of the system components as they work in a manual PTO system

Following that is a description of the system's operation with electric PTO

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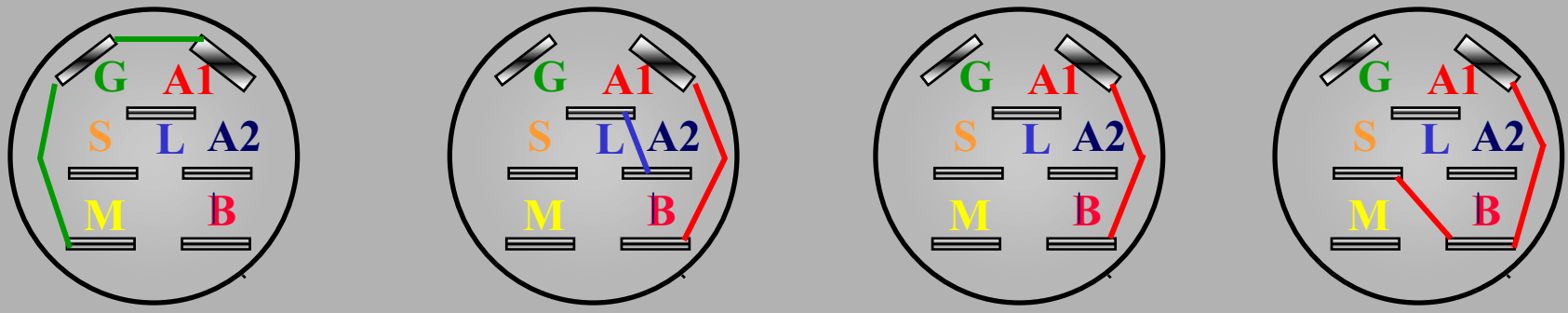
IGNITION SWITCH CONFIGURATION

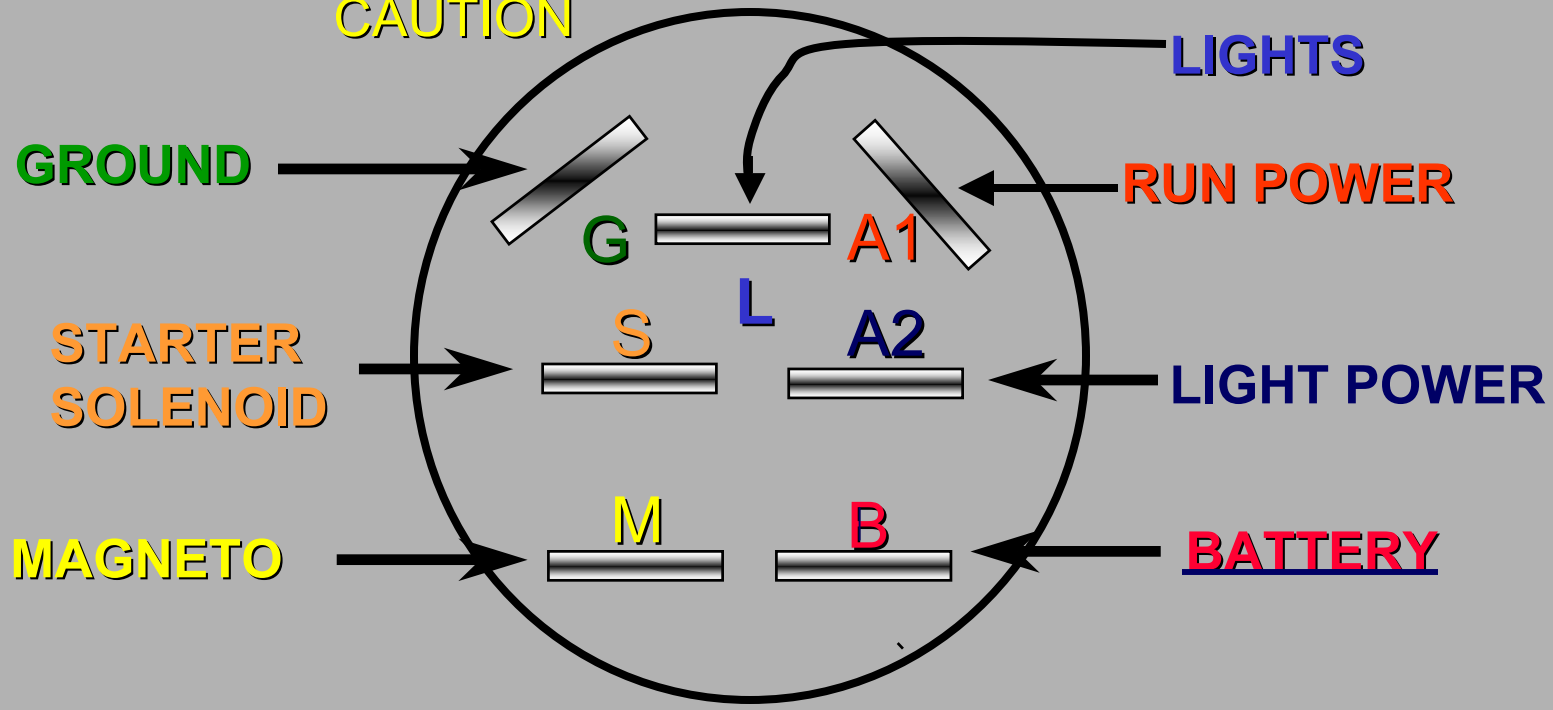


OFF

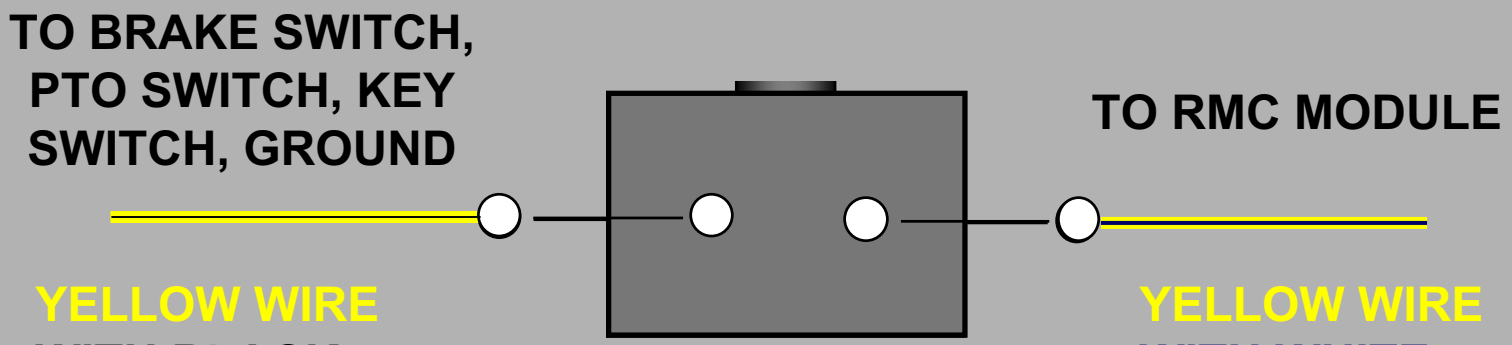
RUN
REVERSE
CAUTION

NORMAL
MOWING

START



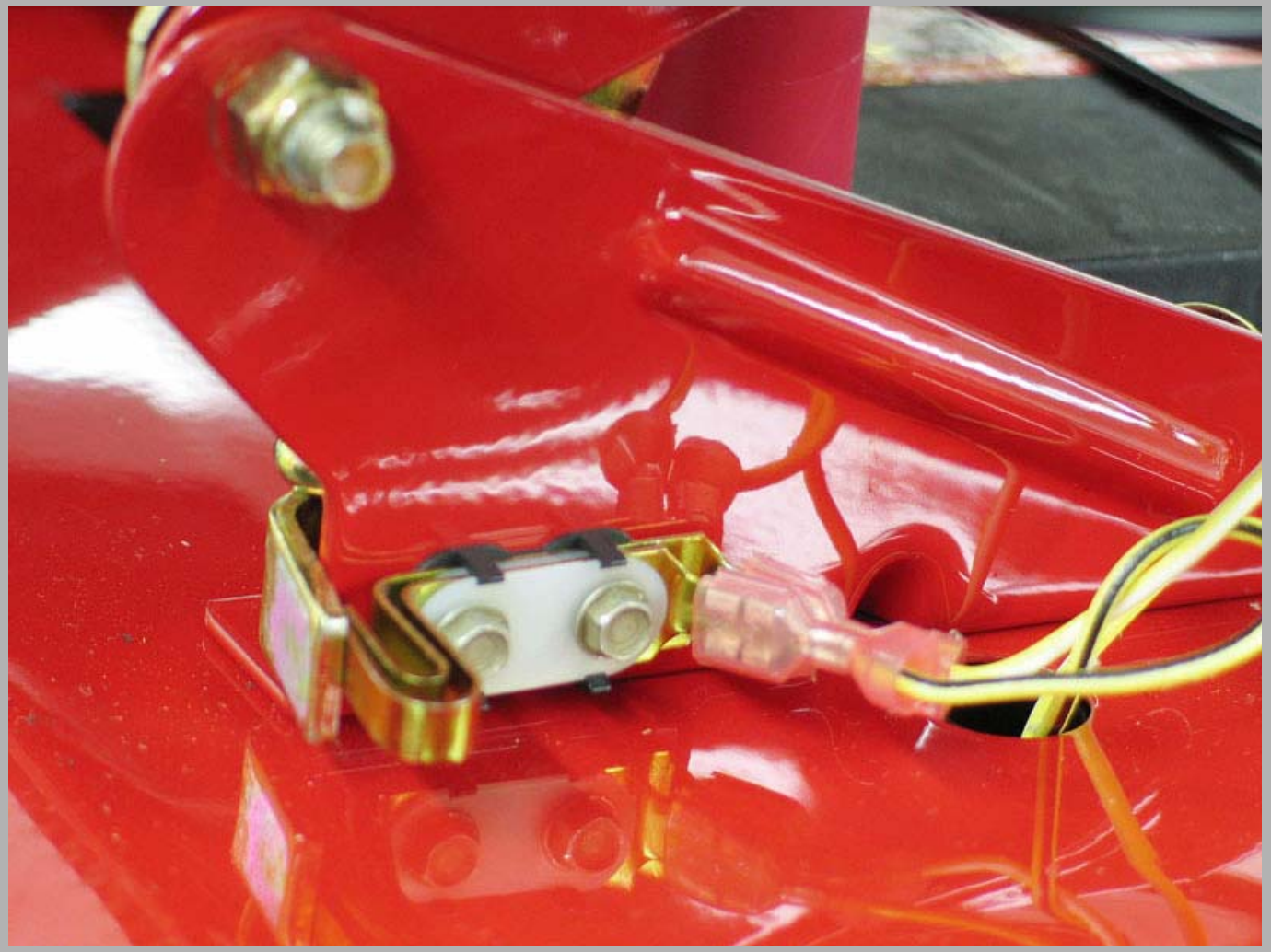
SEAT SWITCH CONFIGURATION



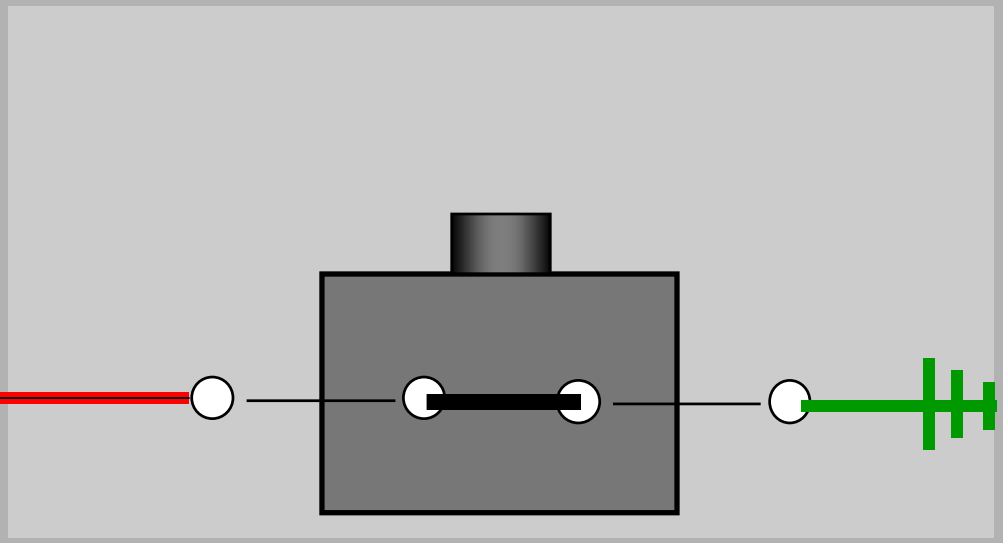
SEAT SWITCH

CONTACTS OPEN WHEN SEAT IS OCCUPIED

SEAT SWITCH



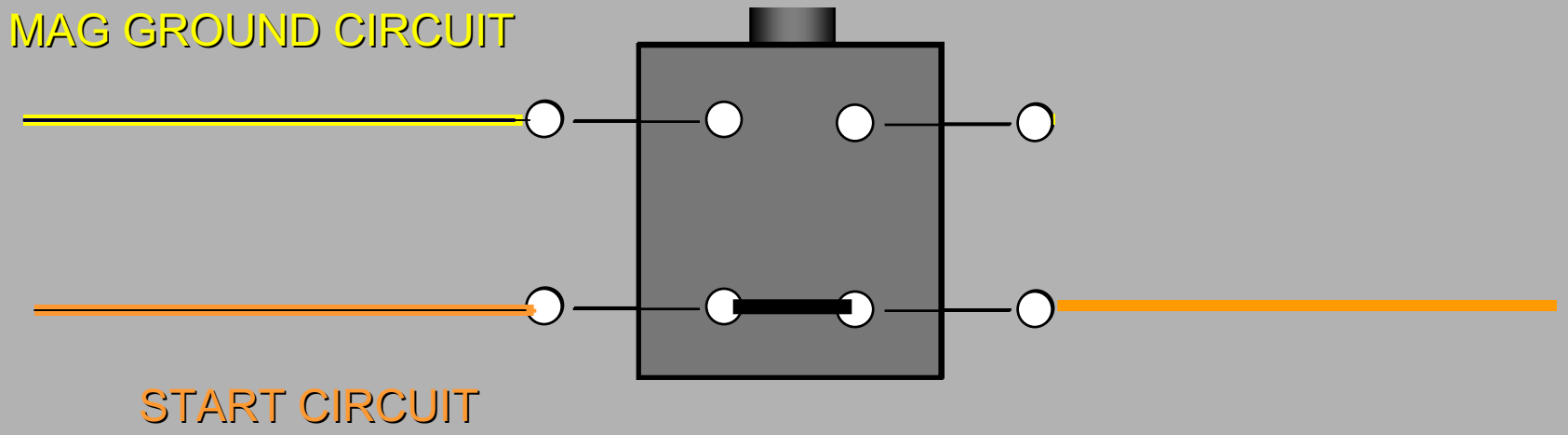
REVERSE SWITCH CONFIGURATION



WHEN REVERSE IS ENGAGED, PATH TO GROUND IS ESTABLISHED.

REVERSE SWITCH

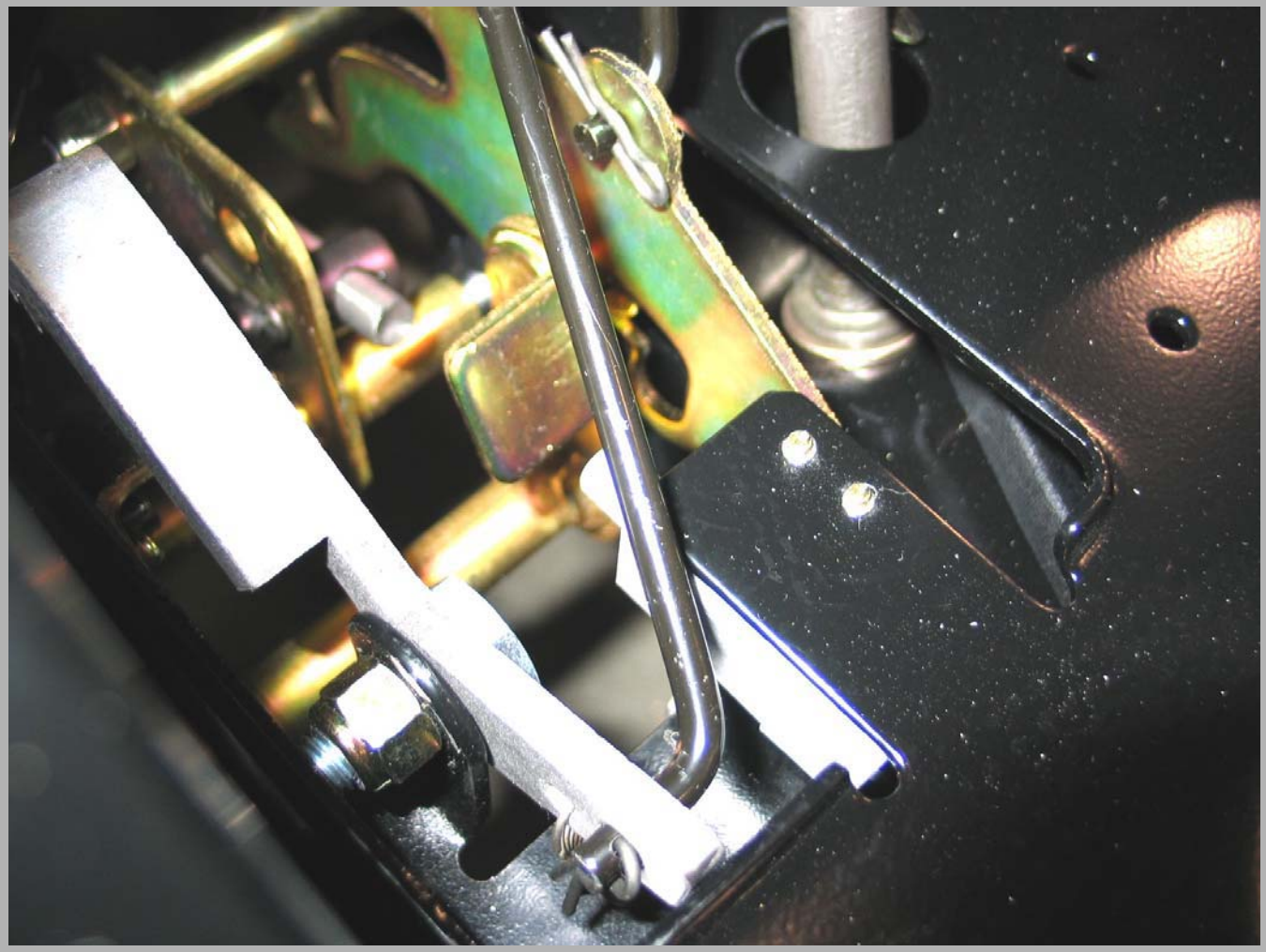
BRAKE SWITCH CONFIGURATION CHART



BRAKE SWITCH

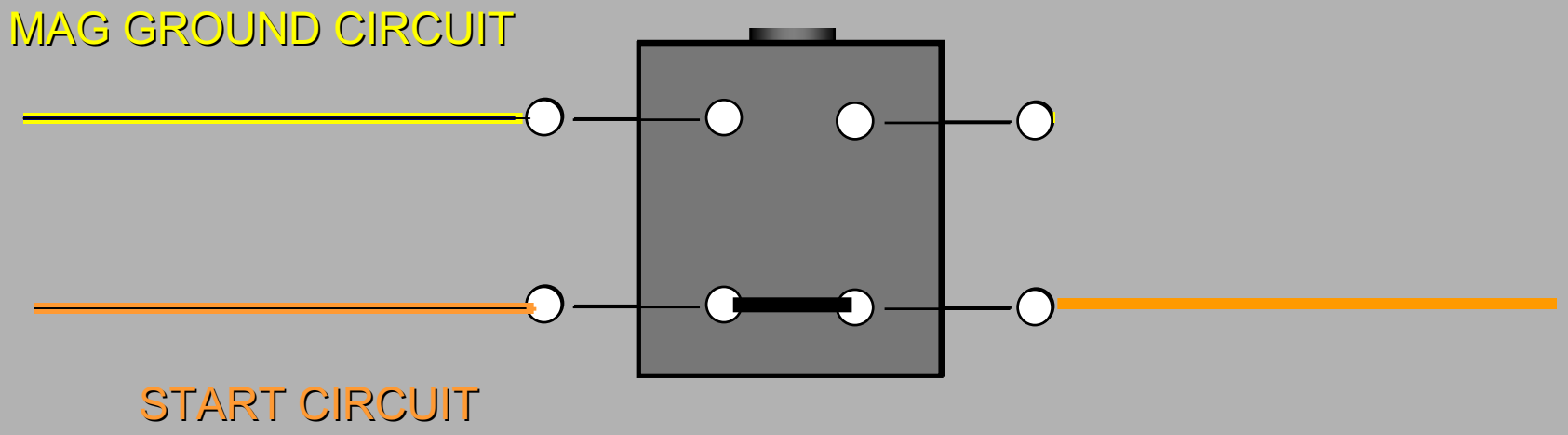
MAG GROUND CIRCUIT OPEN / STARTER CIRCUIT CLOSED
WHEN BRAKE APPLIED (PLUNGER DOWN)

BRAKE SWITCH LOCATION



When the brake is applied, the switch plunger is depressed

PTO SWITCH CONFIGURATION CHART



PTO SWITCH

MAG GROUND CIRCUIT OPEN / STARTER CIRCUIT CLOSED
WHEN PTO OFF (PLUNGER DOWN)

PTO SWITCH LOCATION

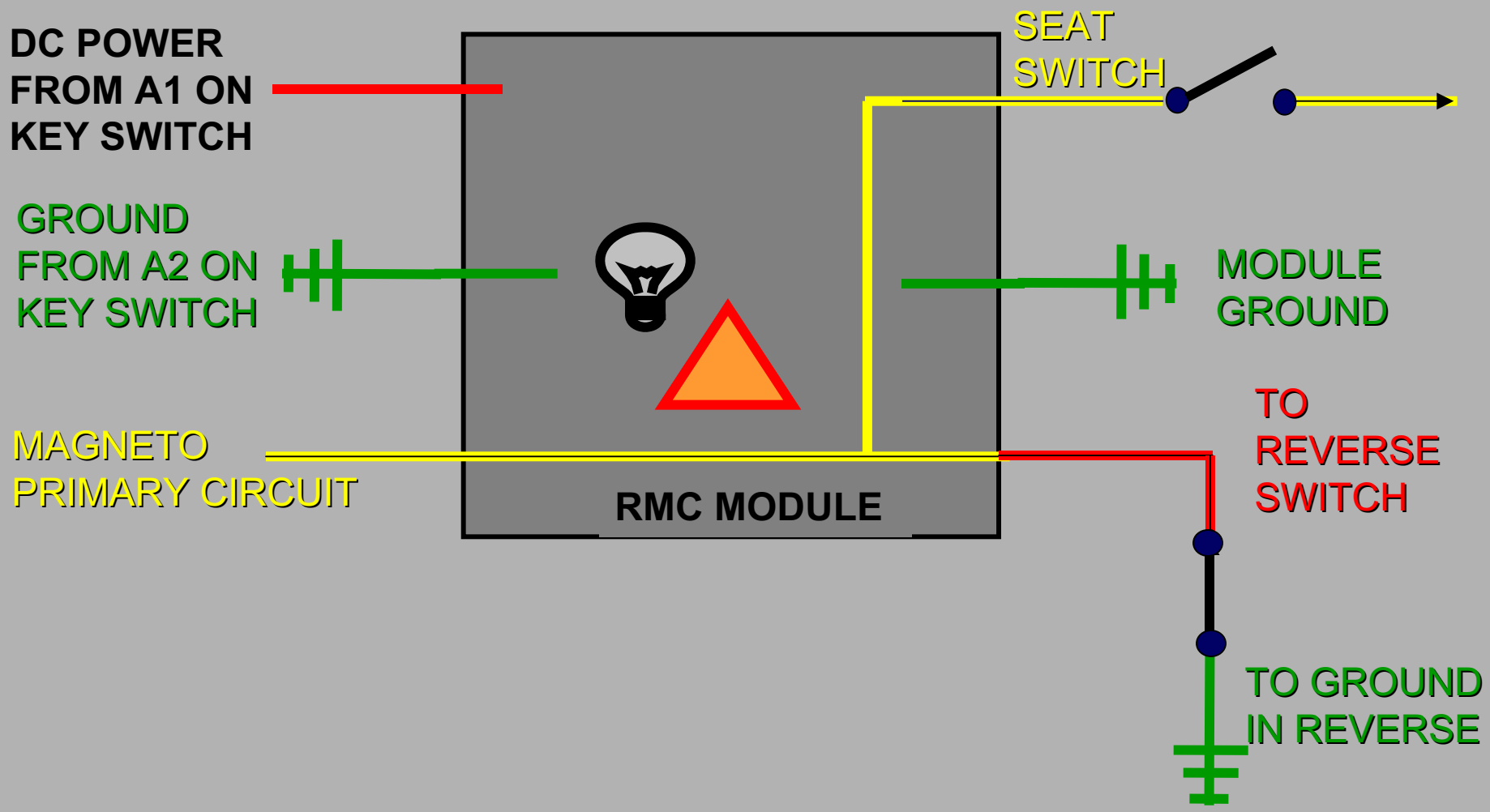
A COUPLE OF THINGS TO REMEMBER ABOUT THE RMC MODULE:

- The module draws ground from the headlight circuit. The lights are powered by a separate AC circuit of the alternator, and are turned-on whenever the engine is running. When the key switch is turned to the former “light” position, the module receives a ground signal from the headlight circuit
- If the RMC module is not turned-on, the tractor will work like our tractors always have, but the mow in reverse feature will not function
- The RMC module has no connection to the starter motor circuit
- Do NOT use a test light for diagnosis. Use a high impedance test light or DVOM

A1 is hot when key in any position but off

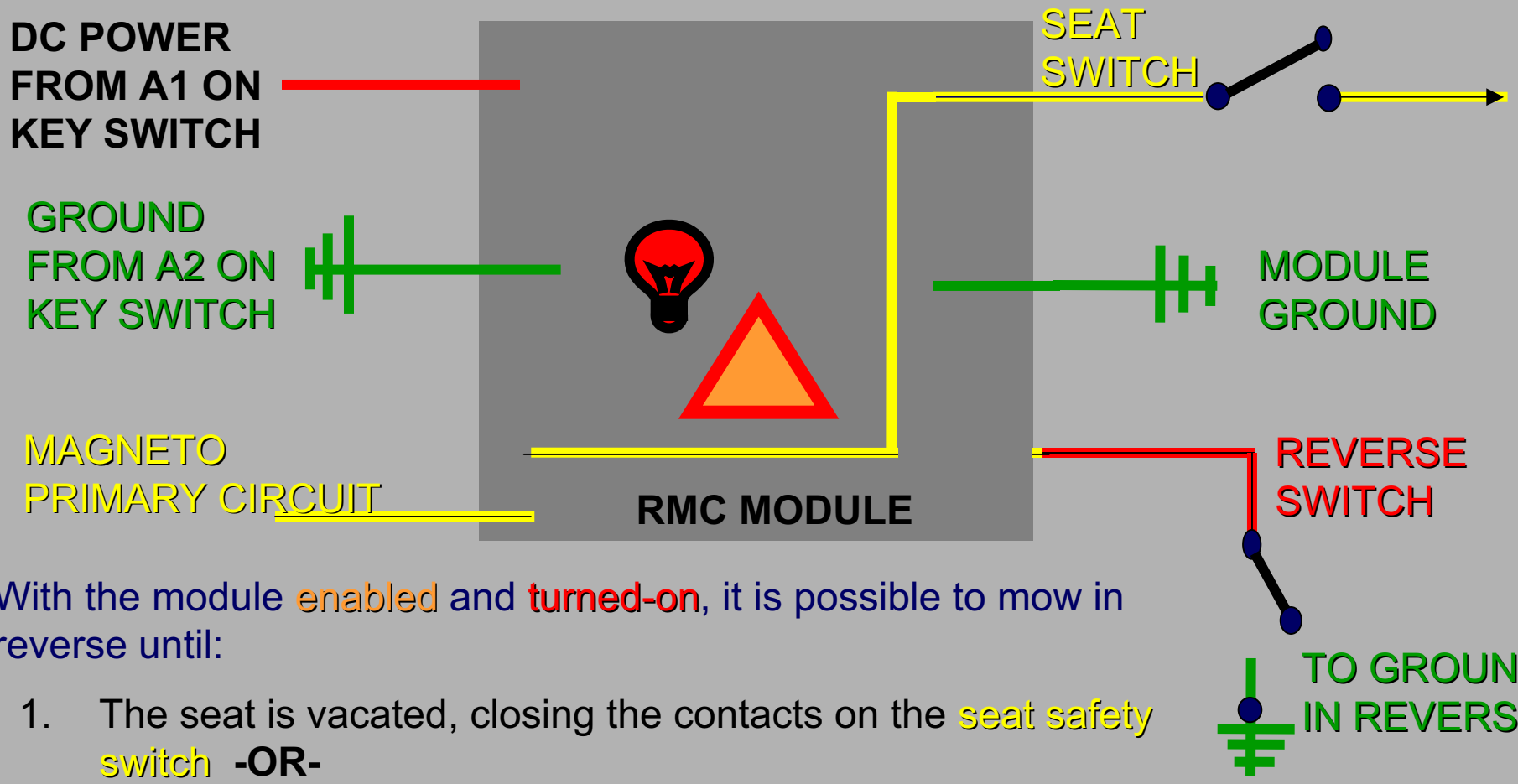
A2 sends ground signal to module when the key in reverse caution position, enabling the module

When the mag primary windings are grounded, ignition turns off



When the module is enabled, pressing the orange triangular button turns it on

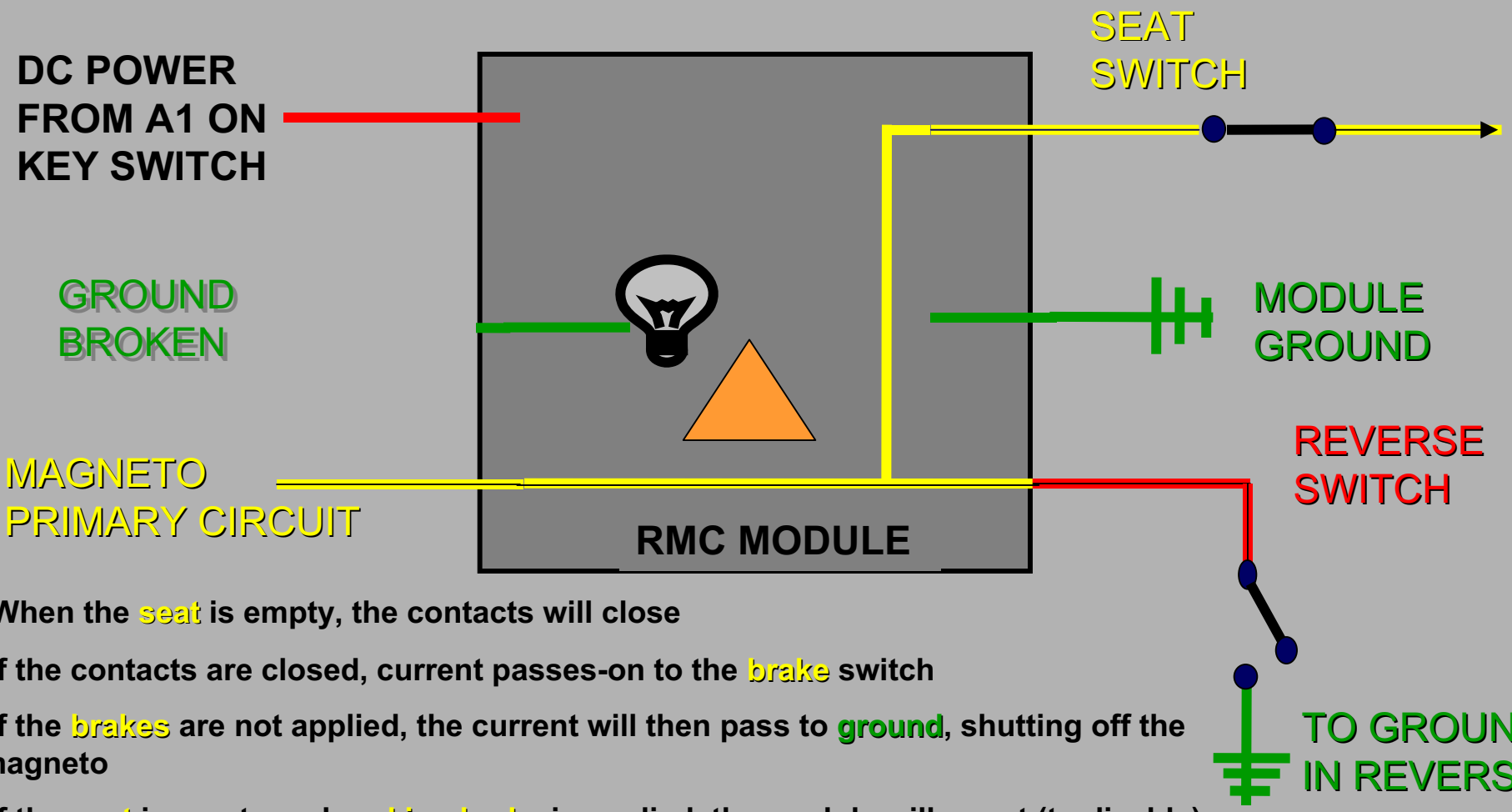
When the module is turned-on, the reverse safety switch is disconnected from the system



With the module enabled and turned-on, it is possible to mow in reverse until:

1. The seat is vacated, closing the contacts on the seat safety switch **-OR-**
2. The key is moved to any position other than "reverse caution".

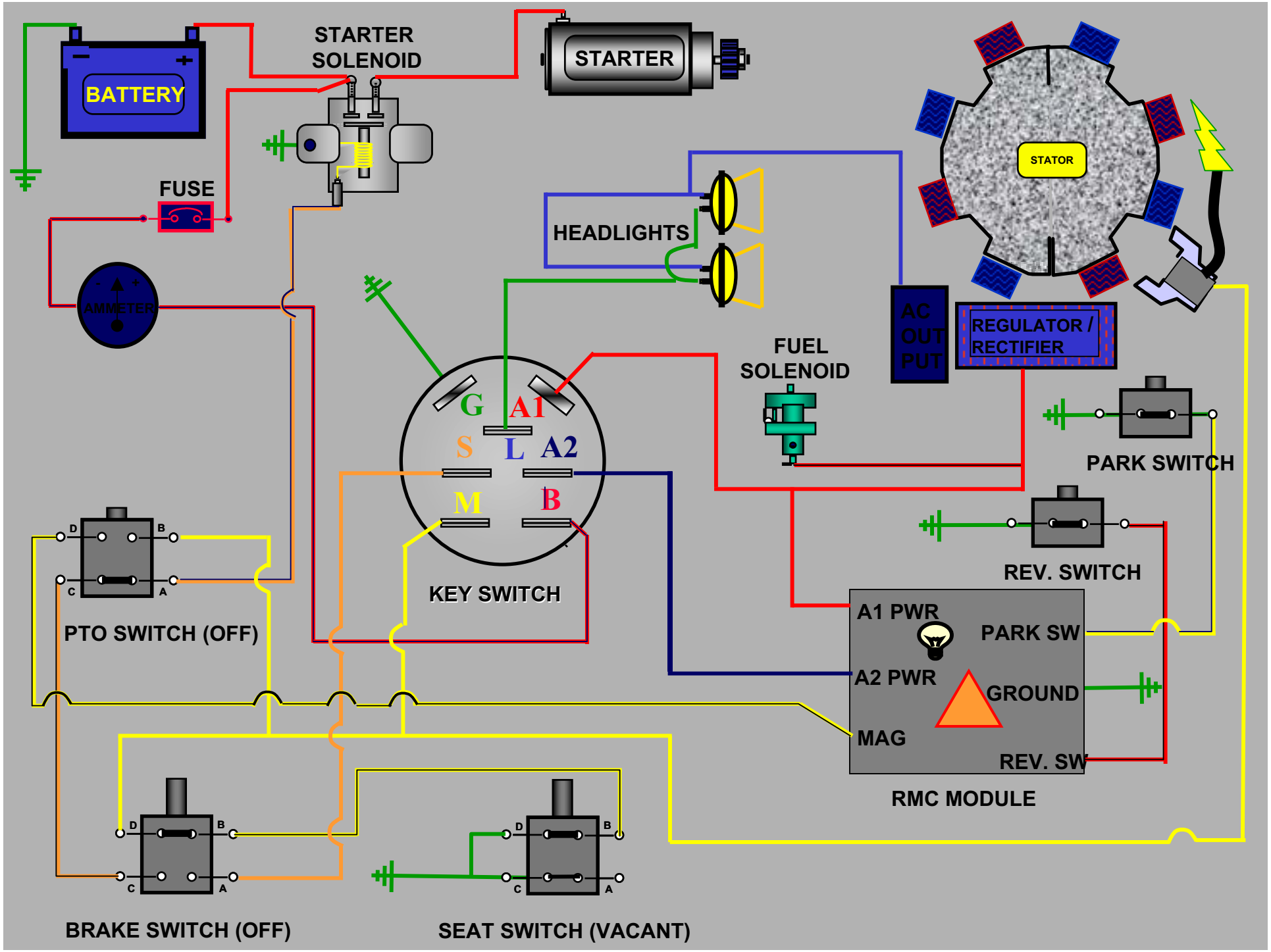
- When the seat is empty, the module disconnects from the A2 Ground, disabling the module
- The tractor will then operate as our tractors always have: the engine will turn-off if the blades and reverse gear are engaged at the same time



- **When the seat is empty, the contacts will close**
- **If the contacts are closed, current passes-on to the brake switch**
- **If the brakes are not applied, the current will then pass to ground, shutting off the magneto**
- **If the seat is empty and parking brake is applied, the module will re-set (to disable) and the engine will continue to run**

Putting these components together in a manual PTO clutch application:

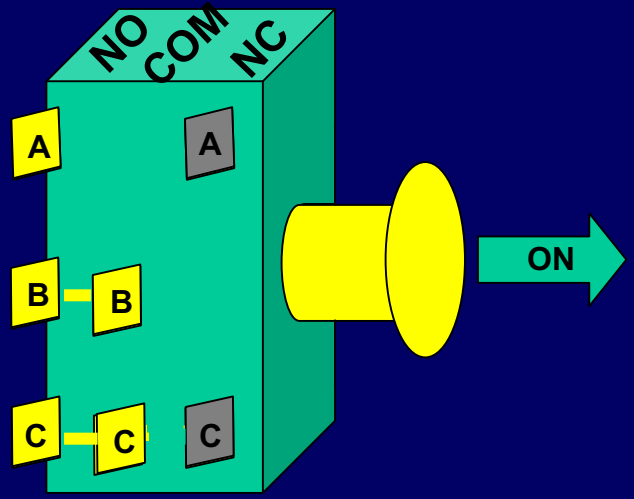
- All the switches operate without relays
- Other than the RMC Module, this is a very simple system


BATTERY
STARTER SOLENOID
STARTER
STATOR
FUSE
HEADLIGHTS
AMMETER
AC OUT PUT
REGULATOR / RECTIFIER
FUEL SOLENOID
G
A1
S
L
A2
M
B
KEY SWITCH
PARK SWITCH
REV. SWITCH
D
B
C
A
PTO SWITCH (OFF)
A1 PWR
PARK SW
A2 PWR
GROUND
MAG
REV. SW
RMC MODULE
BRAKE SWITCH (OFF)
SEAT SWITCH (VACANT)

With an Electric PTO:

Putting these components together in an Electric PTO clutch application: There is one relay in the system, an electric PTO Clutch, and an electric PTO Switch. The PTO switch is of the two-pole, three throw variety.

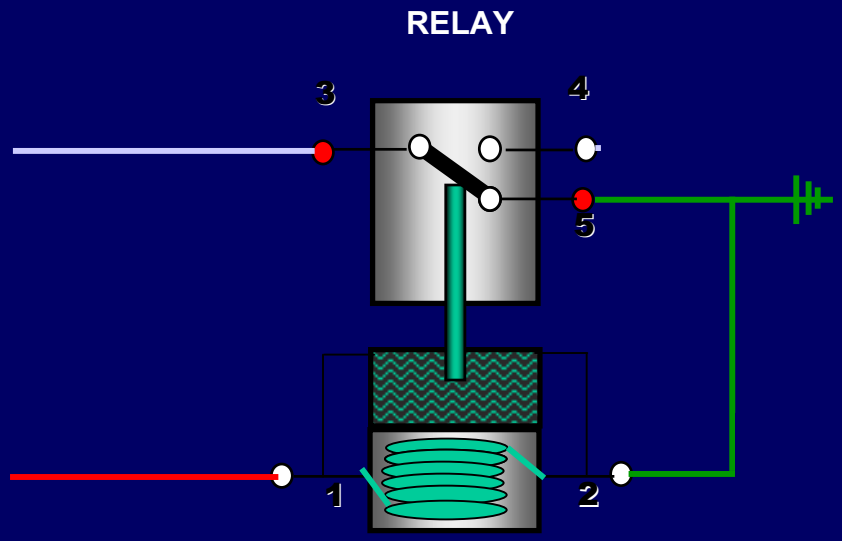
When the PTO is turned ON, contacts within the switch shift from connecting common (COM) and normally closed (NC) spades,



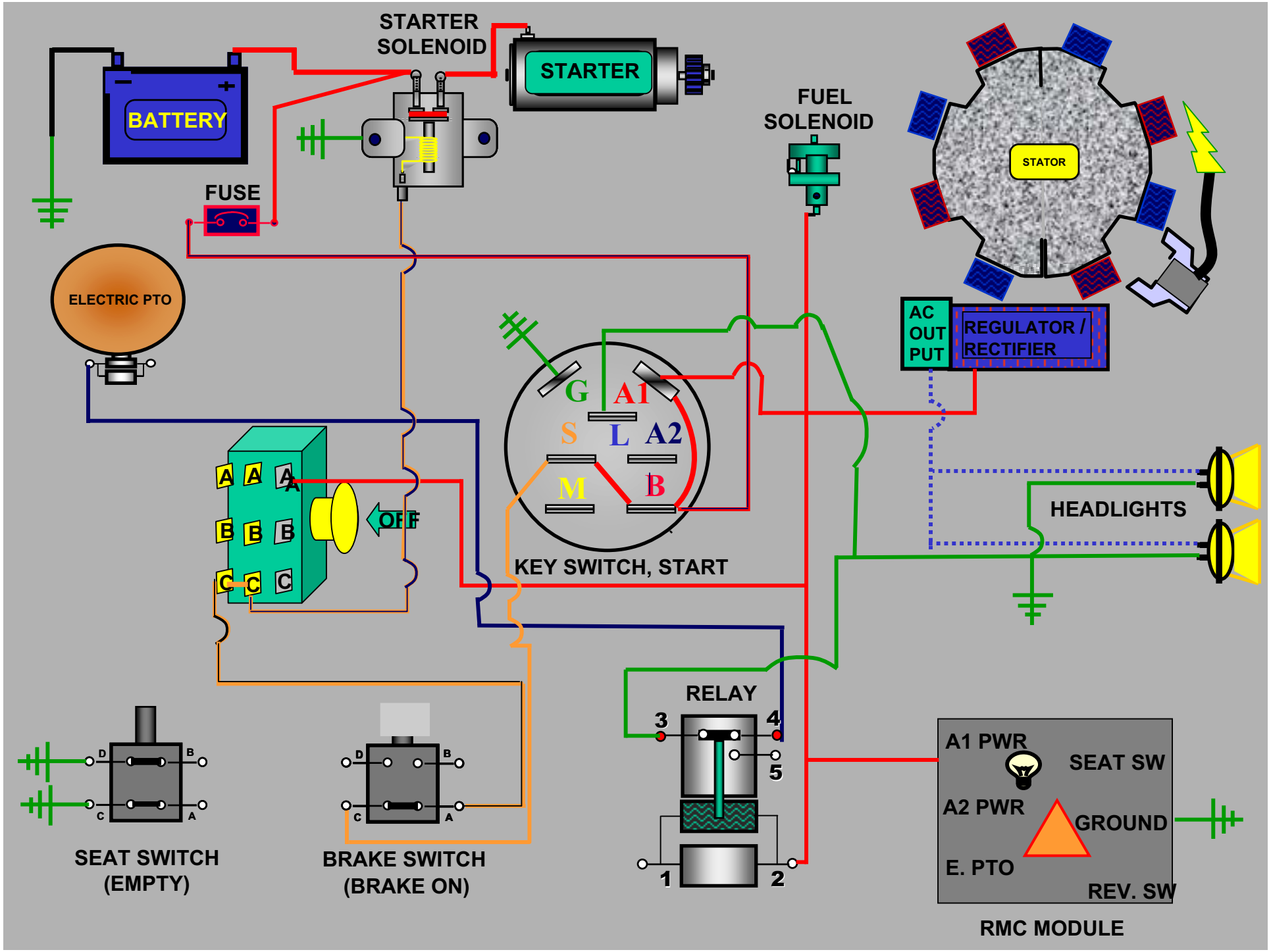
to connecting common (COM) and normally open (NO) spades.

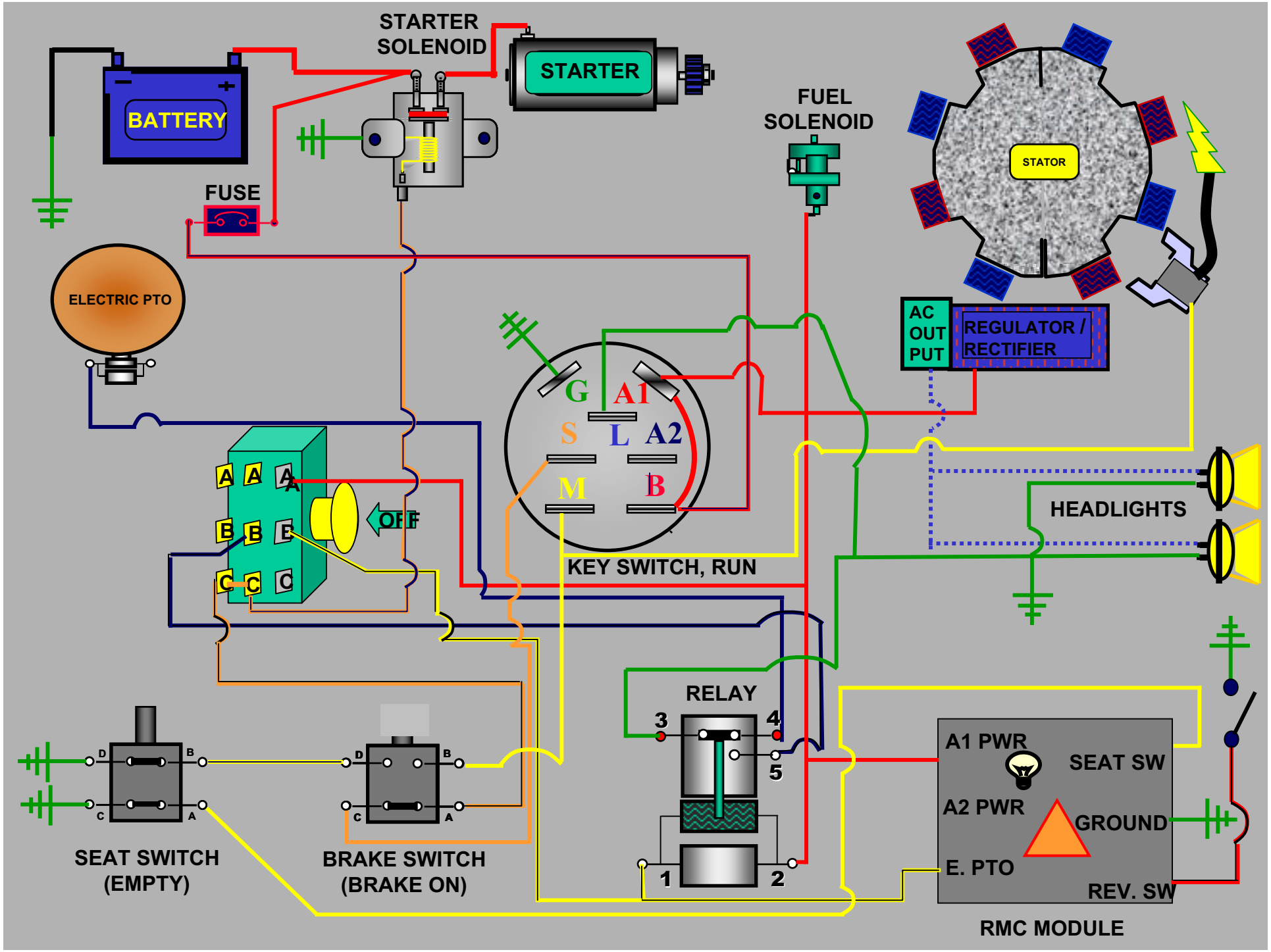
Electric PTO Switch

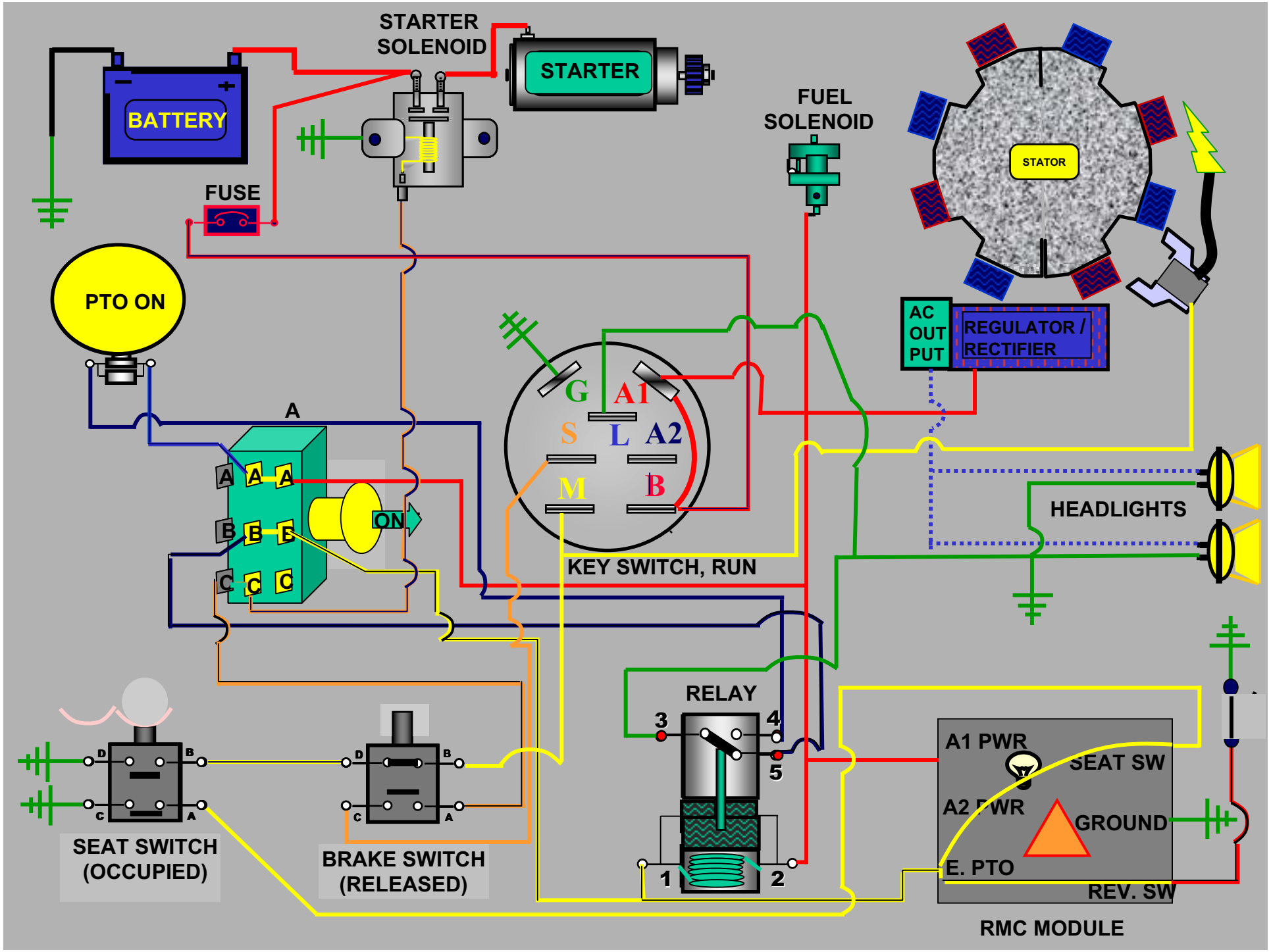
When the relay windings are energized, contacts within the relay shift from connecting common (3) and normally closed spades (4), making contact between the common (3) and normally open (5) spades.

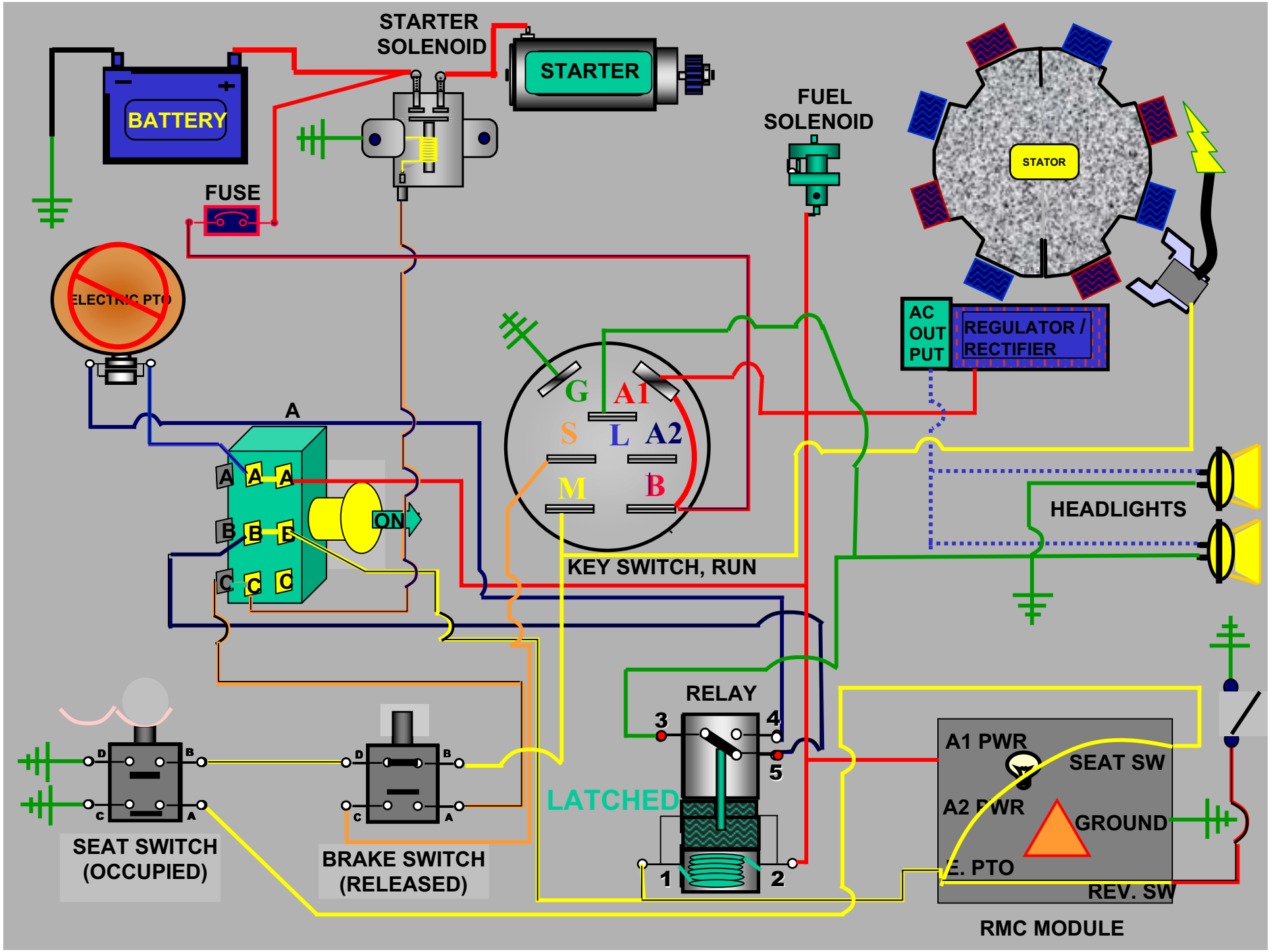


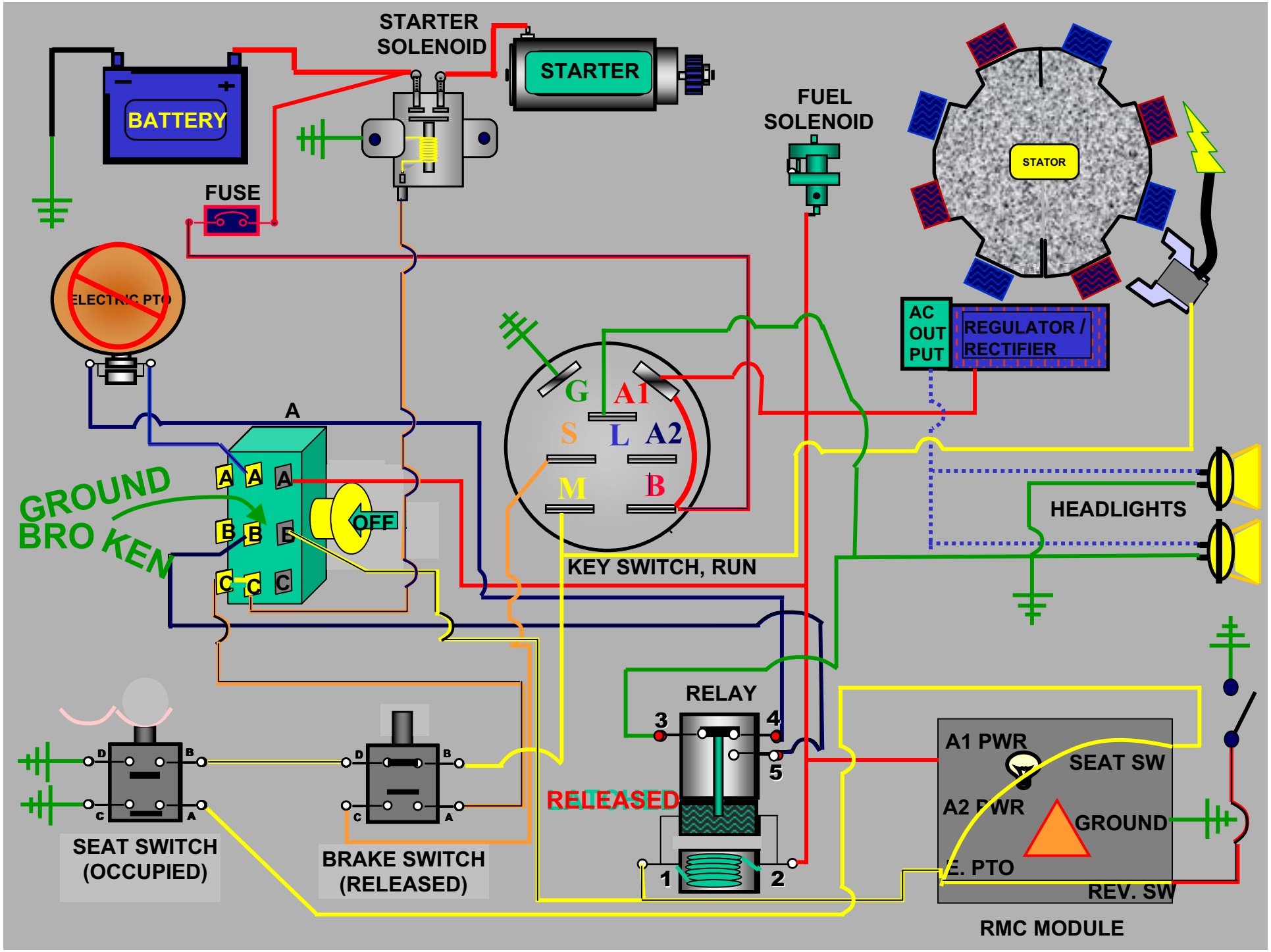
Relay

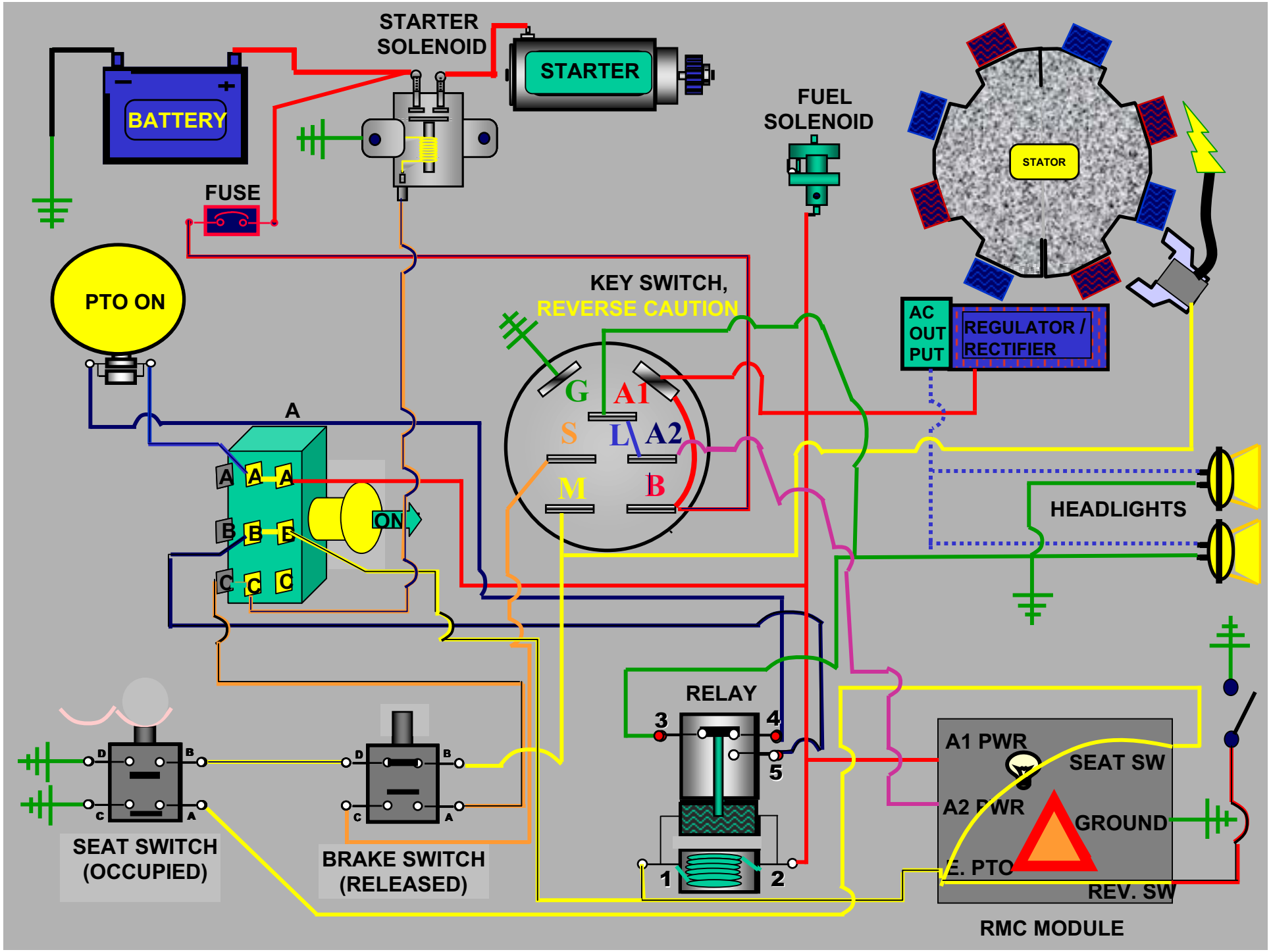

STARTER SOLENOID
STARTER
BATTERY
FUSE
FUEL SOLENOID
STATOR
ELECTRIC PTO
AC OUT PUT
REGULATOR / RECTIFIER
G
A1
S
L
A2
M
B
KEY SWITCH, START
OFF
HEADLIGHTS
RELAY
3
4
5
1
2
SEAT SWITCH (EMPTY)
BRAKE SWITCH (BRAKE ON)
A1 PWR
SEAT SW
A2 PWR
GROUND
E. PTO
REV. SW
RMC MODULE

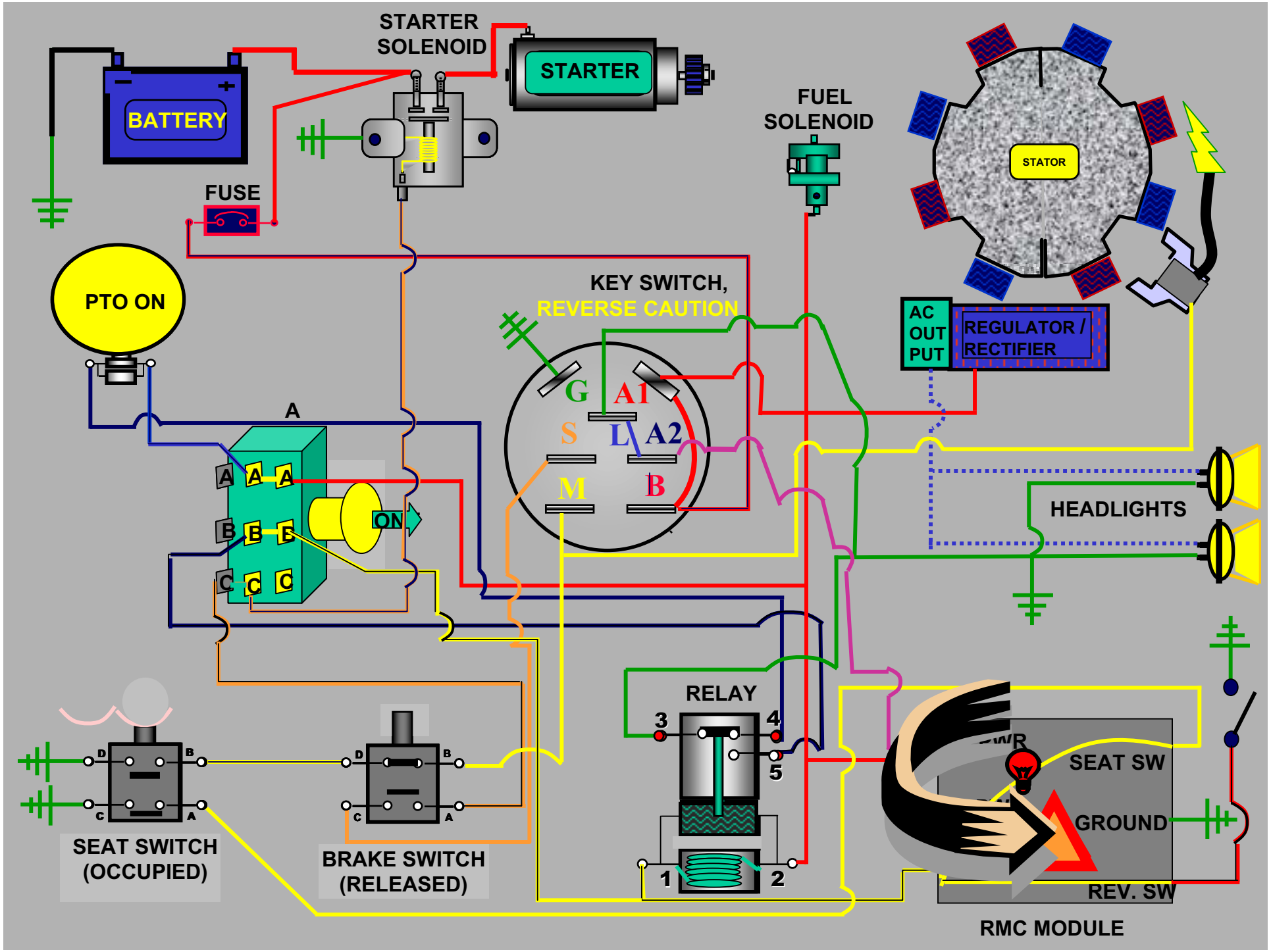

STARTER SOLENOID
STARTER
BATTERY
FUSE
FUEL SOLENOID
STATOR
ELECTRIC PTO
AC OUT PUT
REGULATOR / RECTIFIER
G
A1
S
L
A2
M
B
KEY SWITCH, RUN
A
B
C
OFF
HEADLIGHTS
RELAY
3
4
5
1
2
D
B
C
A
SEAT SWITCH (EMPTY)
BRAKE SWITCH (BRAKE ON)
A1 PWR
SEAT SW
A2 PWR
GROUND
E. PTO
REV. SW
RMC MODULE

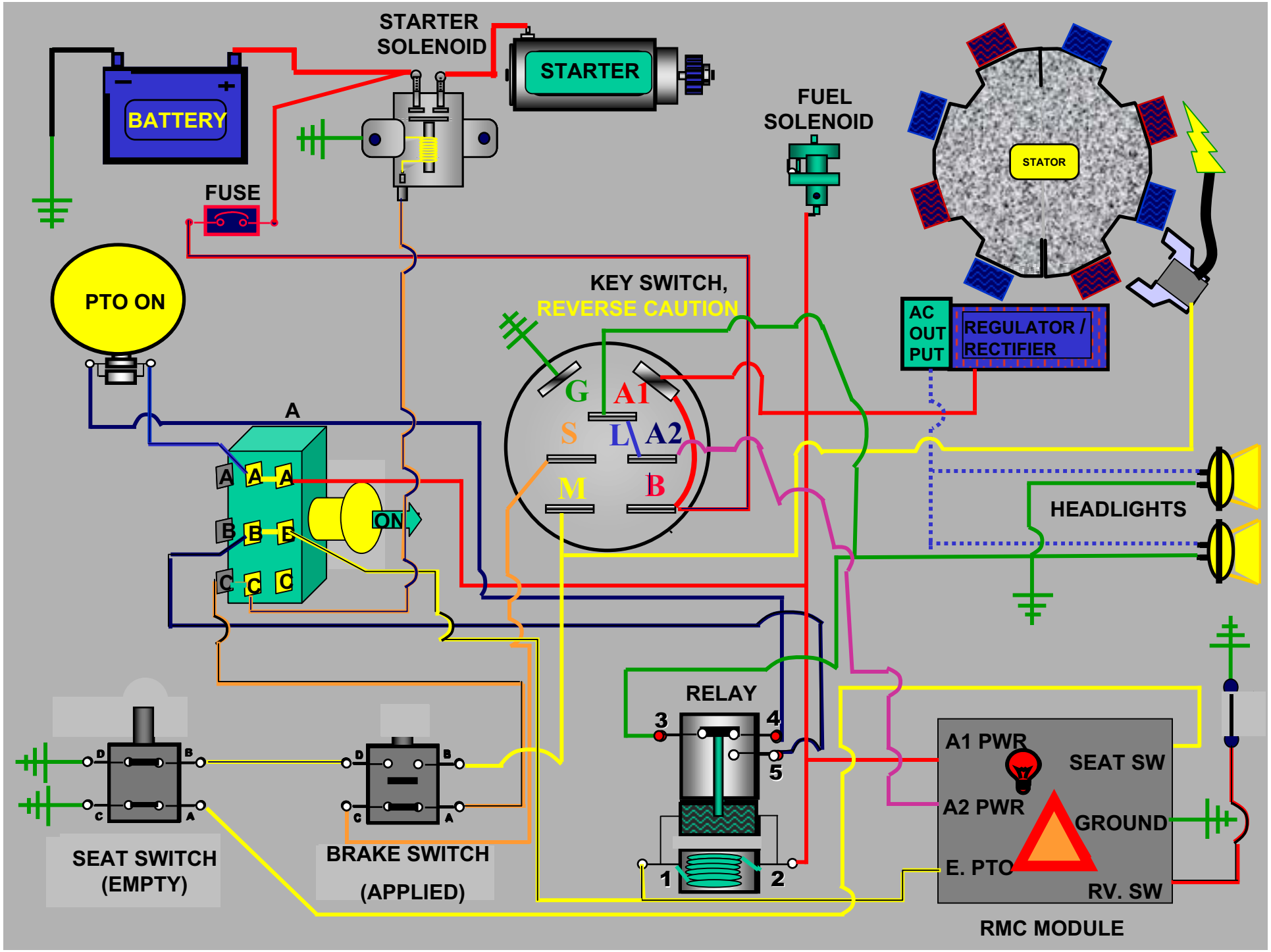

STARTER SOLENOID
STARTER
BATTERY
FUSE
FUEL SOLENOID
STATOR
PTO ON
AC OUT PUT
REGULATOR / RECTIFIER
A
ON
G
A1
S
L
A2
M
B
KEY SWITCH, RUN
HEADLIGHTS
RELAY
3
4
5
1
2
SEAT SWITCH (OCCUPIED)
BRAKE SWITCH (RELEASED)
A1 PWR
SEAT SW
A2 PWR
GROUND
E. PTO
REV. SW
RMC MODULE

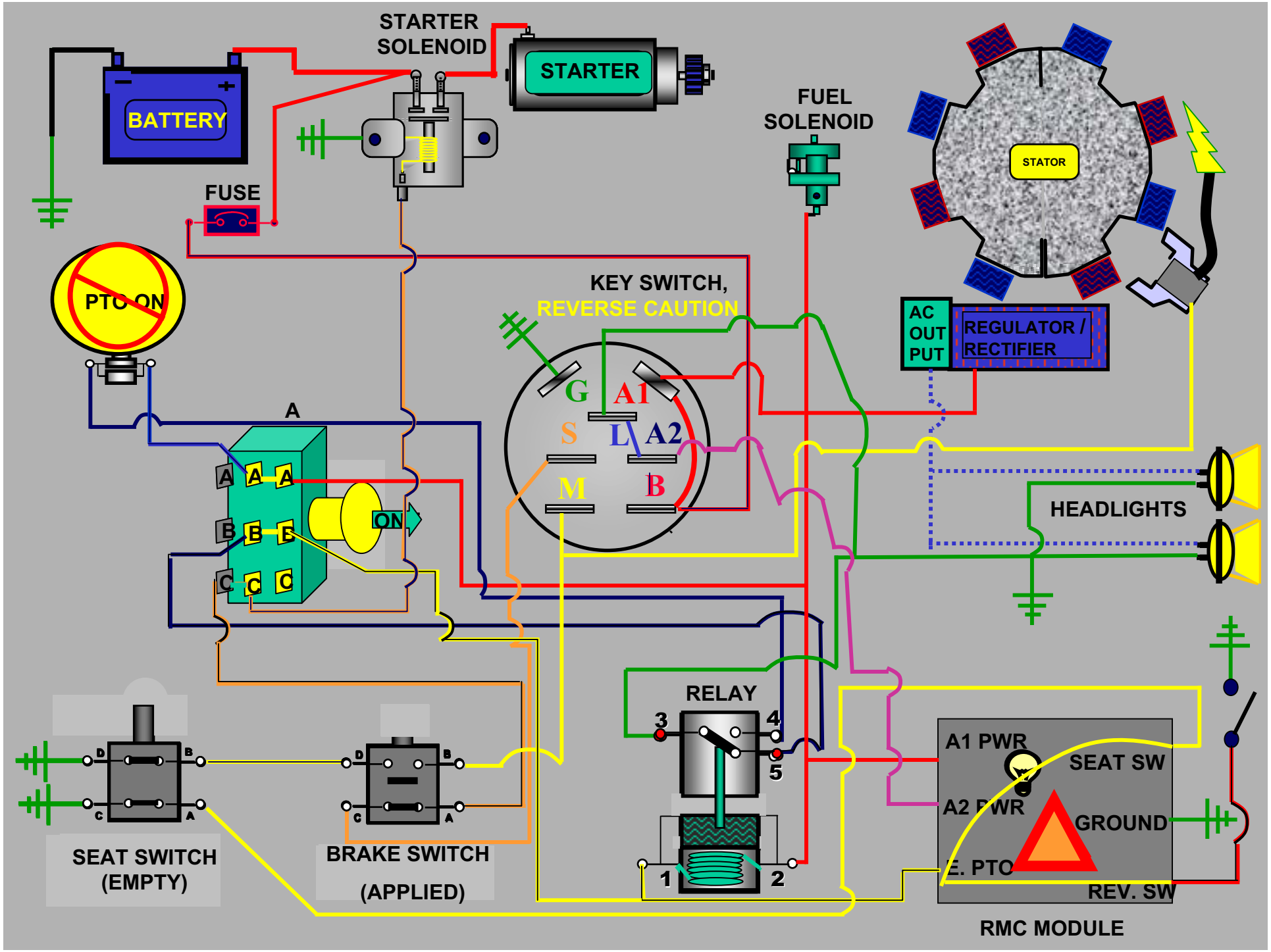

STARTER SOLENOID
STARTER
BATTERY
FUSE
FUEL SOLENOID
STATOR
ELECTRIC PTO
AC OUT PUT
REGULATOR / RECTIFIER
A
ON
G
A1
S
L
A2
M
B
KEY SWITCH, RUN
HEADLIGHTS
RELAY
3
4
5
1
2
LATCHED
A1 PWR
SEAT SW
A2 PWR
GROUND
E. PTO
REV. SW
RMC MODULE
SEAT SWITCH (OCCUPIED)
BRAKE SWITCH (RELEASED)

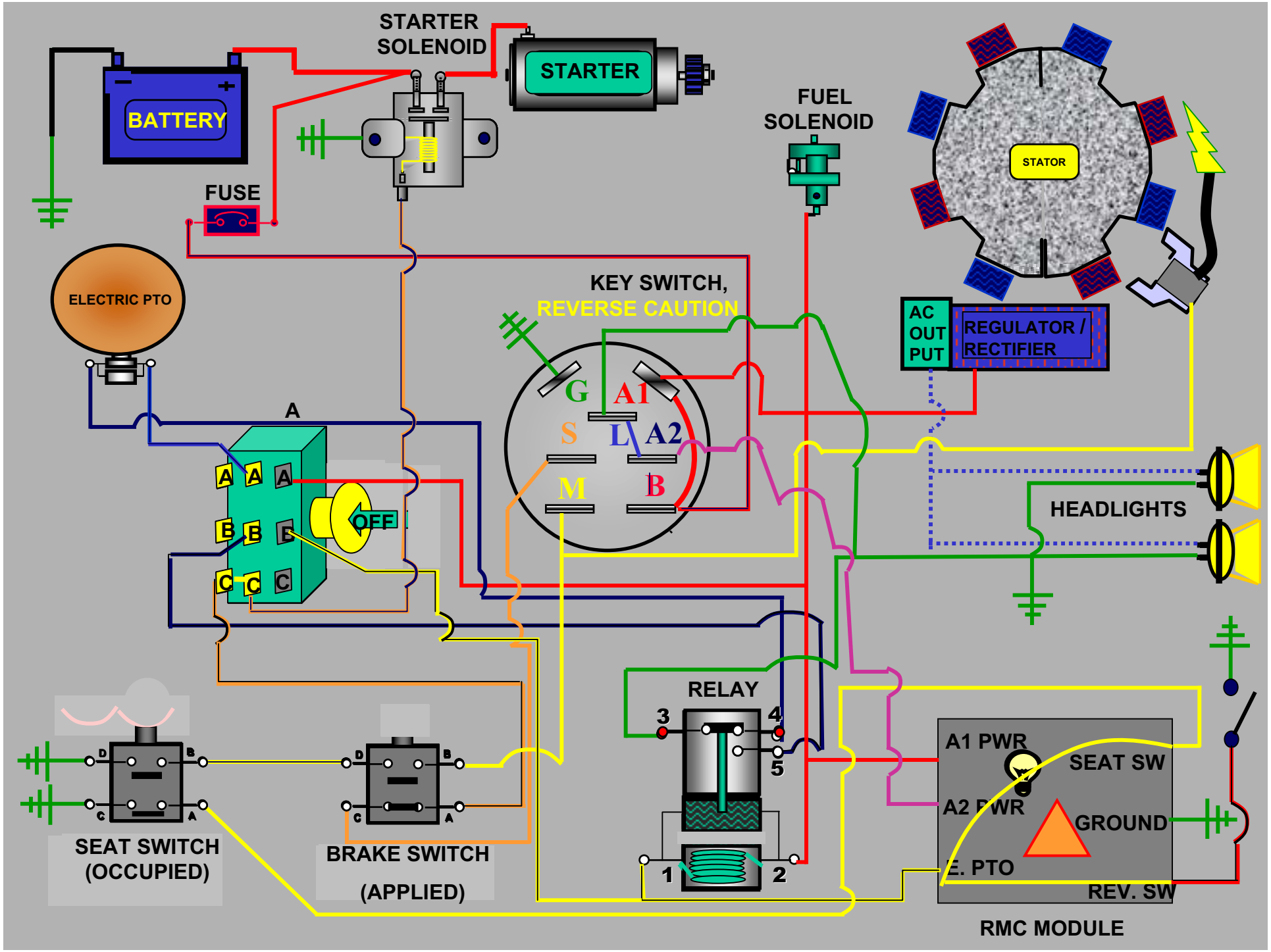

STARTER SOLENOID
STARTER
BATTERY
FUSE
FUEL SOLENOID
STATOR
ELECTRIC PTO
AC OUT PUT
REGULATOR / RECTIFIER
A
G
A1
S
L
A2
M
B
GROUND BRO KEN
OFF
KEY SWITCH, RUN
HEADLIGHTS
RELAY
3
4
5
RELEASED
1
2
A1 PWR
SEAT SW
A2 PWR
GROUND
E. PTO
REV. SW
RMC MODULE
SEAT SWITCH (OCCUPIED)
BRAKE SWITCH (RELEASED)


STARTER SOLENOID
STARTER
BATTERY
FUSE
FUEL SOLENOID
STATOR
PTO ON
KEY SWITCH,
REVERSE CAUTION
G
A1
S
L
A2
M
B
AC OUT PUT
REGULATOR / RECTIFIER
A
ON
HEADLIGHTS
RELAY
3
4
5
1
2
A1 PWR
SEAT SW
A2 PWR
GROUND
E. PTO
REV. SW
RMC MODULE
SEAT SWITCH (OCCUPIED)
BRAKE SWITCH (RELEASED)


STARTER SOLENOID
STARTER
BATTERY
FUSE
FUEL SOLENOID
STATOR
PTO ON
KEY SWITCH,
REVERSE CAUTION
AC OUT PUT
REGULATOR / RECTIFIER
A
G
A1
S
L
A2
M
B
ON
HEADLIGHTS
RELAY
3
4
5
1
2
SEAT SW
GROUND
REV. SW
RMC MODULE
SEAT SWITCH (OCCUPIED)
BRAKE SWITCH (RELEASED)


STARTER SOLENOID
STARTER
BATTERY
FUSE
FUEL SOLENOID
STATOR
PTO ON
KEY SWITCH,
REVERSE CAUTION
G
A1
S
L
A2
M
B
AC OUT PUT
REGULATOR / RECTIFIER
A
ON
HEADLIGHTS
RELAY
3
4
5
1
2
A1 PWR
SEAT SW
A2 PWR
GROUND
E. PTO
RV. SW
RMC MODULE
SEAT SWITCH (EMPTY)
BRAKE SWITCH (APPLIED)


STARTER SOLENOID
STARTER
BATTERY
FUSE
FUEL SOLENOID
STATOR
PTO ON
KEY SWITCH,
REVERSE CAUTION
G
A1
S
L
A2
M
B
AC OUT PUT
REGULATOR / RECTIFIER
A
ON
HEADLIGHTS
RELAY
3
4
5
1
2
SEAT SWITCH (EMPTY)
BRAKE SWITCH (APPLIED)
A1 PWR
SEAT SW
A2 PWR
GROUND
E. PTO
REV. SW
RMC MODULE


STARTER SOLENOID
STARTER
BATTERY
FUSE
FUEL SOLENOID
STATOR
ELECTRIC PTO
KEY SWITCH,
REVERSE CAUTION
G
A1
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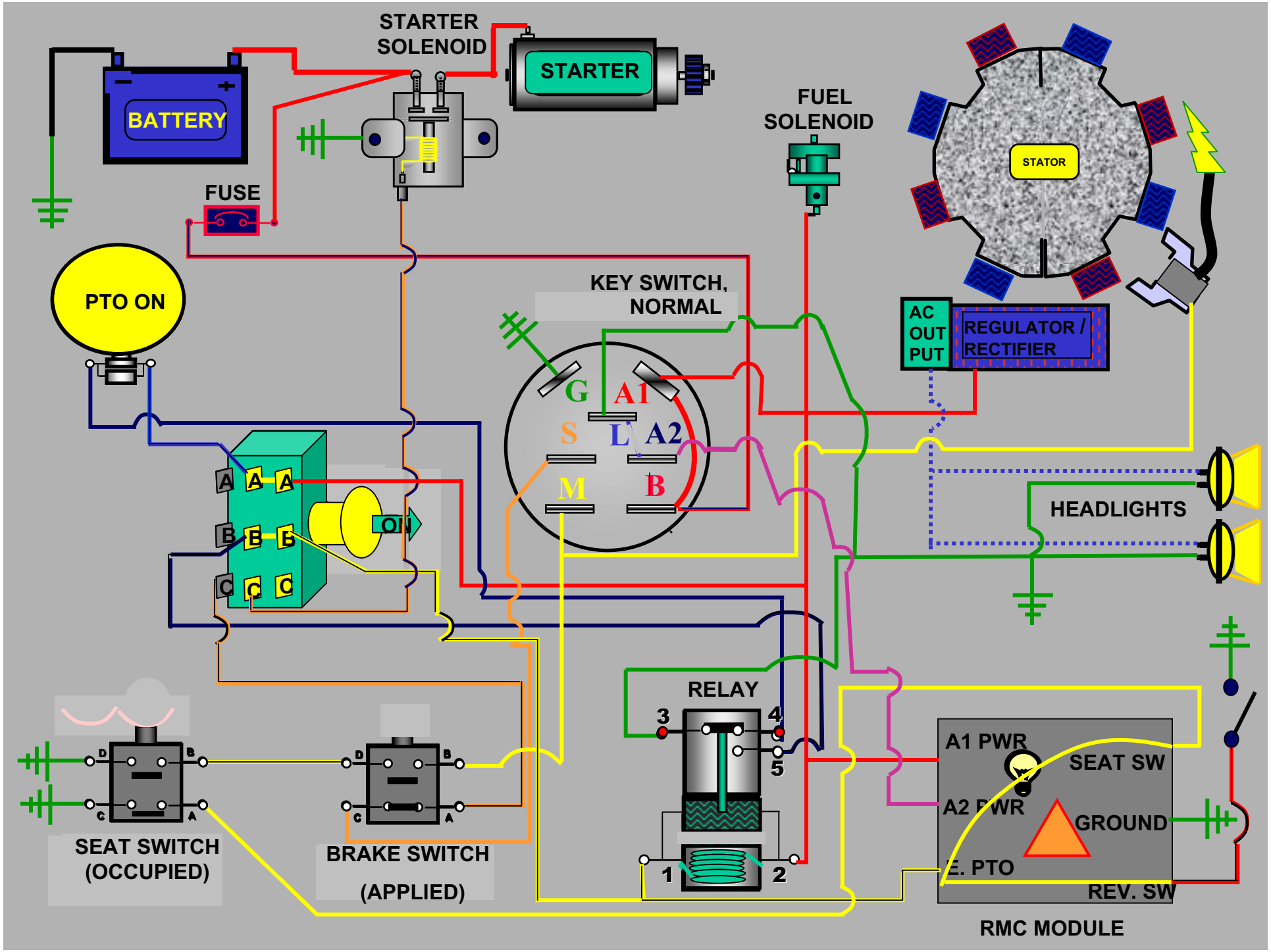
L
A2
M
B
AC OUT PUT
REGULATOR / RECTIFIER
A
OFF
HEADLIGHTS
RELAY
3
4
5
1
2
SEAT SWITCH (OCCUPIED)
BRAKE SWITCH (APPLIED)
A1 PWR
SEAT SW
A2 PWR
GROUND
E. PTO
REV. SW
RMC MODULE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STARTER
BATTERY
FUSE
FUEL SOLENOID
STATOR
PTO ON
KEY SWITCH, NORMAL
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A1
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AC OUT PUT
REGULATOR / RECTIFIER
HEADLIGHTS
A
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OIL
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1
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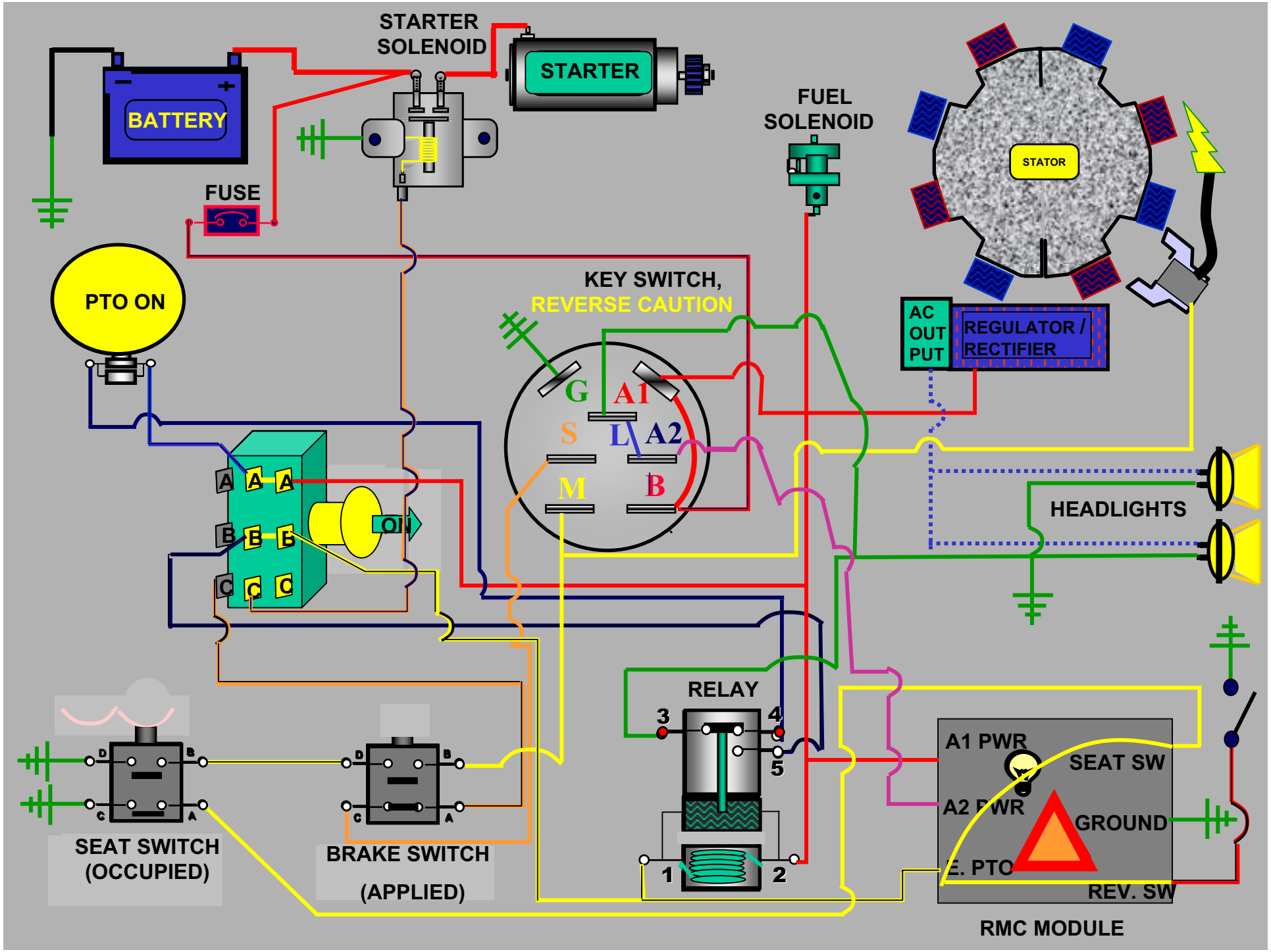
SEAT SWITCH (OCCUPIED)
BRAKE SWITCH (APPLIED)
A1 PWR
SEAT SW
A2 PWR
GROUND
E. PTO
REV. SW
RMC MODULE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SEAT SWITCH (OCCUPIED)
BRAKE SWITCH (APPLIED)
D
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C
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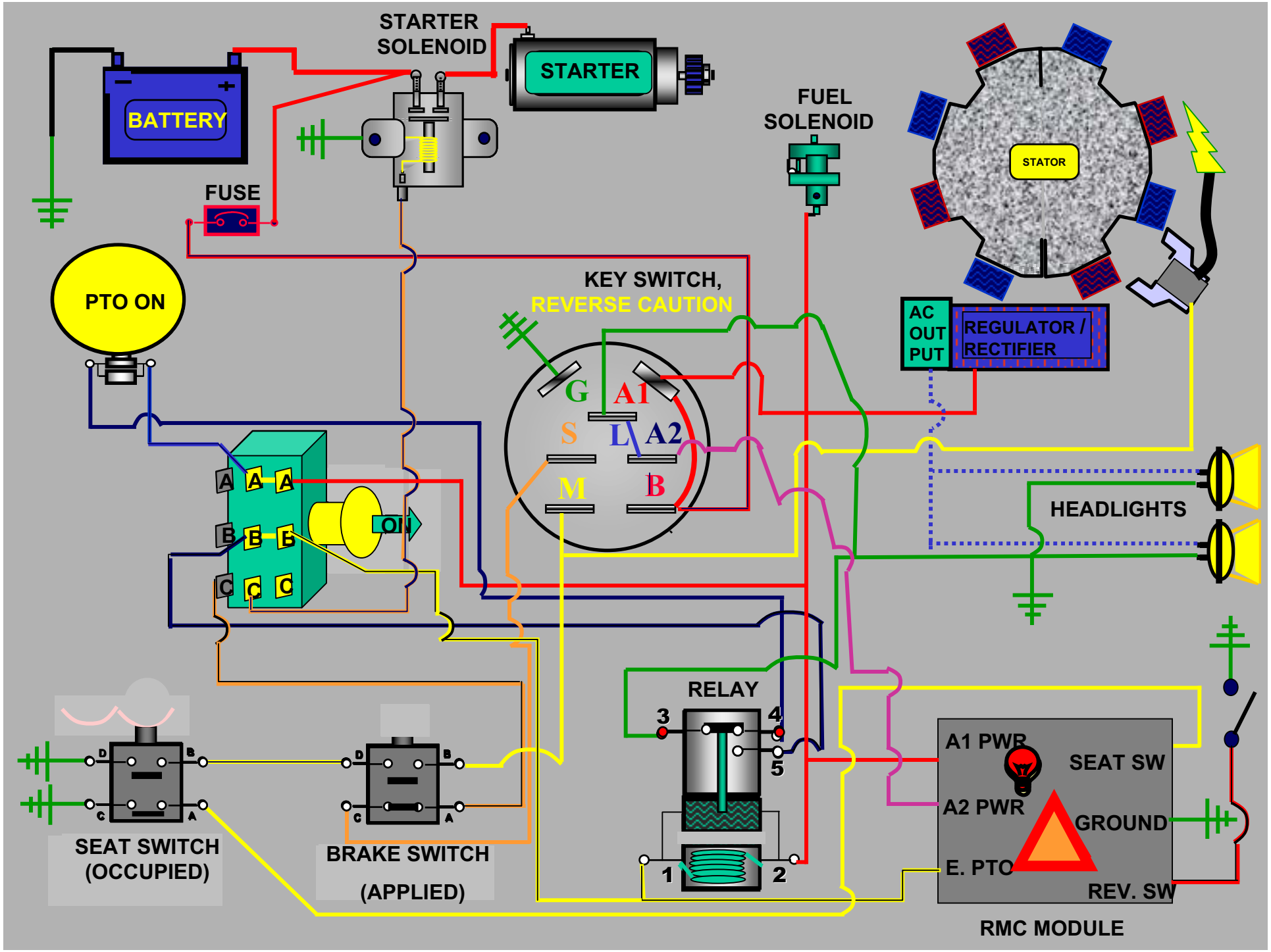
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BATTERY
FUSE
FUEL SOLENOID
STATOR
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KEY SWITCH,
REVERSE CAUTION
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B
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HEADLIGHTS
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SEAT SWITCH (OCCUPIED)
BRAKE SWITCH (APPLIED)
A1 PWR
SEAT SW
A2 PWR
GROUND
E. PTO
REV. SW
RMC MODULE

Now we've seen how it works, and it is time to put that knowledge to work for us in a diagnostic exercise:

- Use symptoms to direct search
- RMC module is a handy starting point because it is central to the system
- Reminder: RMC module is not tied into the starter circuit in any way

Question #1:
What is it doing (or not doing)?

- Confirm symptoms yourself…ALWAYS
- Test all safety systems before letting any service work out the door
- Understand what the system is supposed to do
- Check the simple “preliminaries” like battery voltage
- Give the machine a quick look-over for obvious things like corroded terminals or chafed wires

Question #2:
Where do the symptoms point?

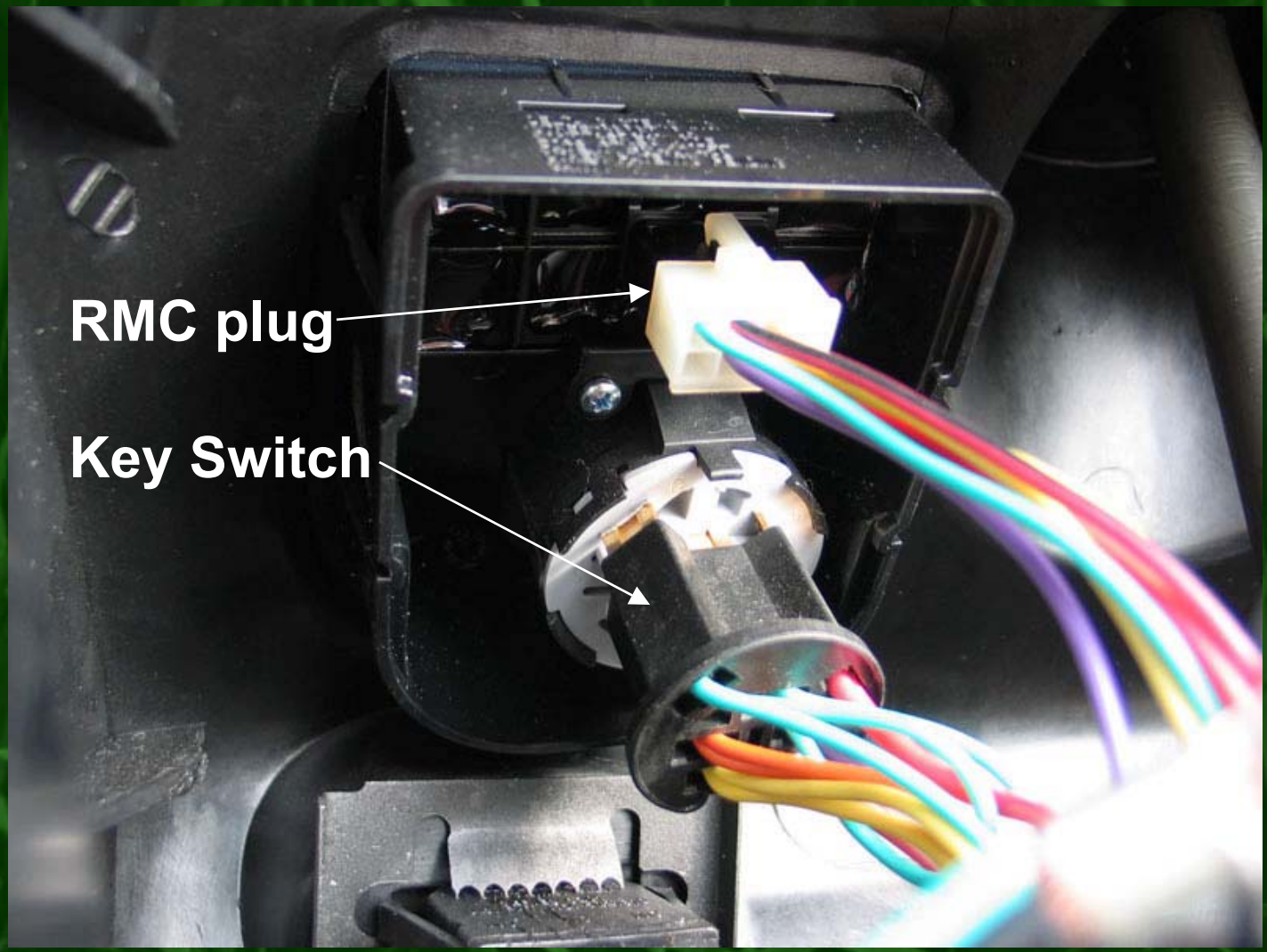
- Are there multiple symptoms with a common root?
- Is there obvious physical damage that might be related to the symptoms?
- Know the system: eg. If the engine turns off when the seat is occupied and the operator releases the brake, does the tractor “know” that anyone is in the seat?
- Scientific method: develop hypothesis, then test hypothesis

Question #3:
Where do I start?

- One end or the other
- It is reasonable to work from either end of a system in an orderly fashion
- In this system, most of the circuits end at or near the RMC module
- The RMC module is a handy place to start, but by no means the only place to start
- Understand what each component is supposed to do
- Previous experience: good
- Superstition: bad

UPDATE

As it fits in the dash:



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Scenario #1:
PTO / Brake / Seat Circuit

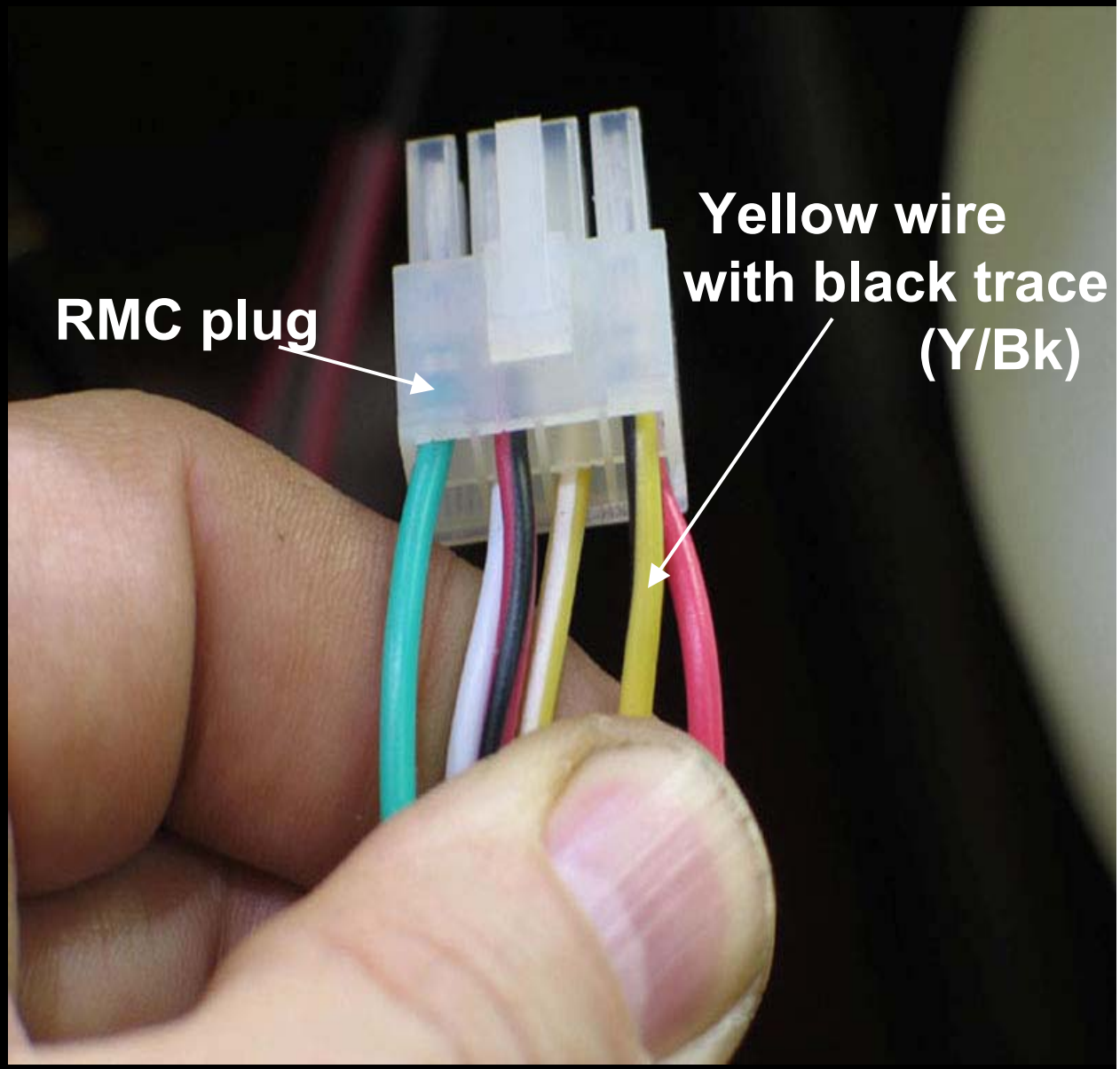
- Typical symptoms: Engine turns-off when the seat is occupied, or when the seat is empty and the parking brake is set
- Alternate failure mode: Engine continues running with seat empty and manual PTO engaged, or brake not applied
- Find the junction of the involved circuits

In this case, it is the yellow wire with black trace. Probing it with a DVOM should yield:

1. Continuity to ground when the seat is empty
2. Continuity to ground when the PTO is ON and the brake is released

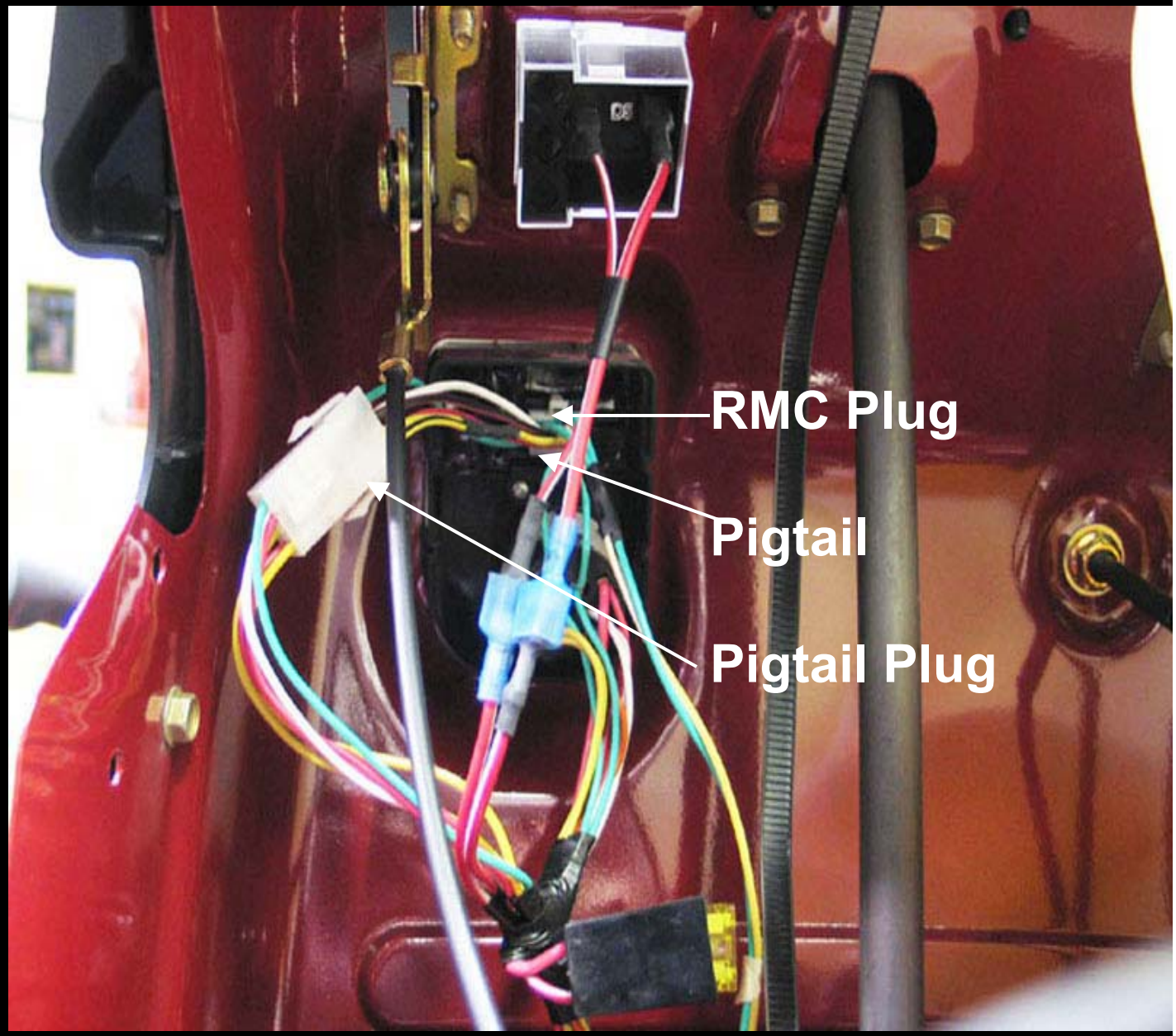
If there is continuity at other times, there is a short.

If 1 or 2 are not true, there is a fault.



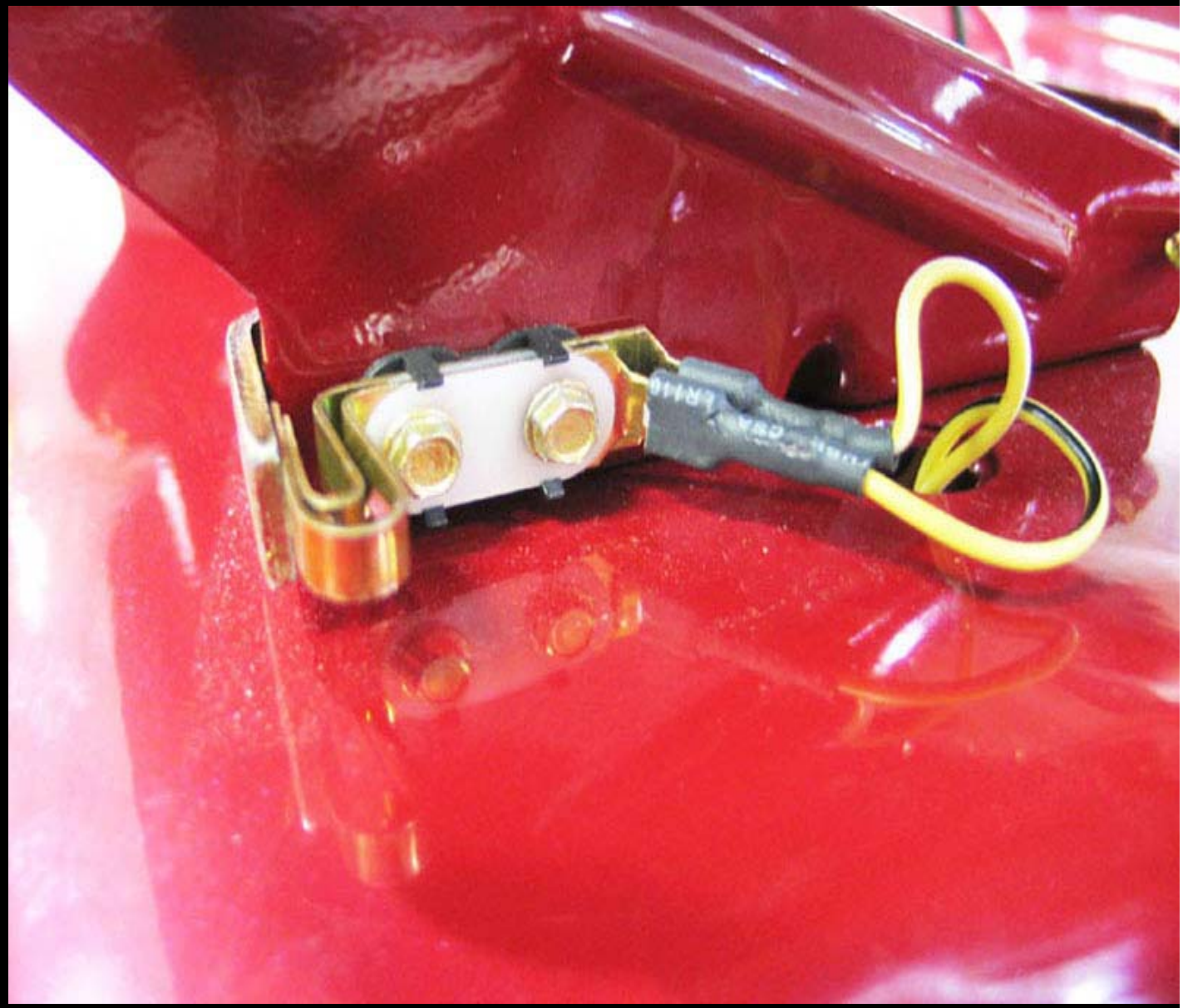
To identify the short or fault, Trace wire to the pigtail plug:

- The Y/Bk wire splits into two Y/Bk wires entering the pigtail plug
- One Y/Bk wire continues as Y/Bk
- One Y/Bk wire changes to yellow with a white trace (Y/W)



The Y/W wire leads directly to the seat switch:

- Isolate and test Y/W wire for short or fault
- Test with switch to confirm contact through switch



UPDATE

A Review of Belt Basics

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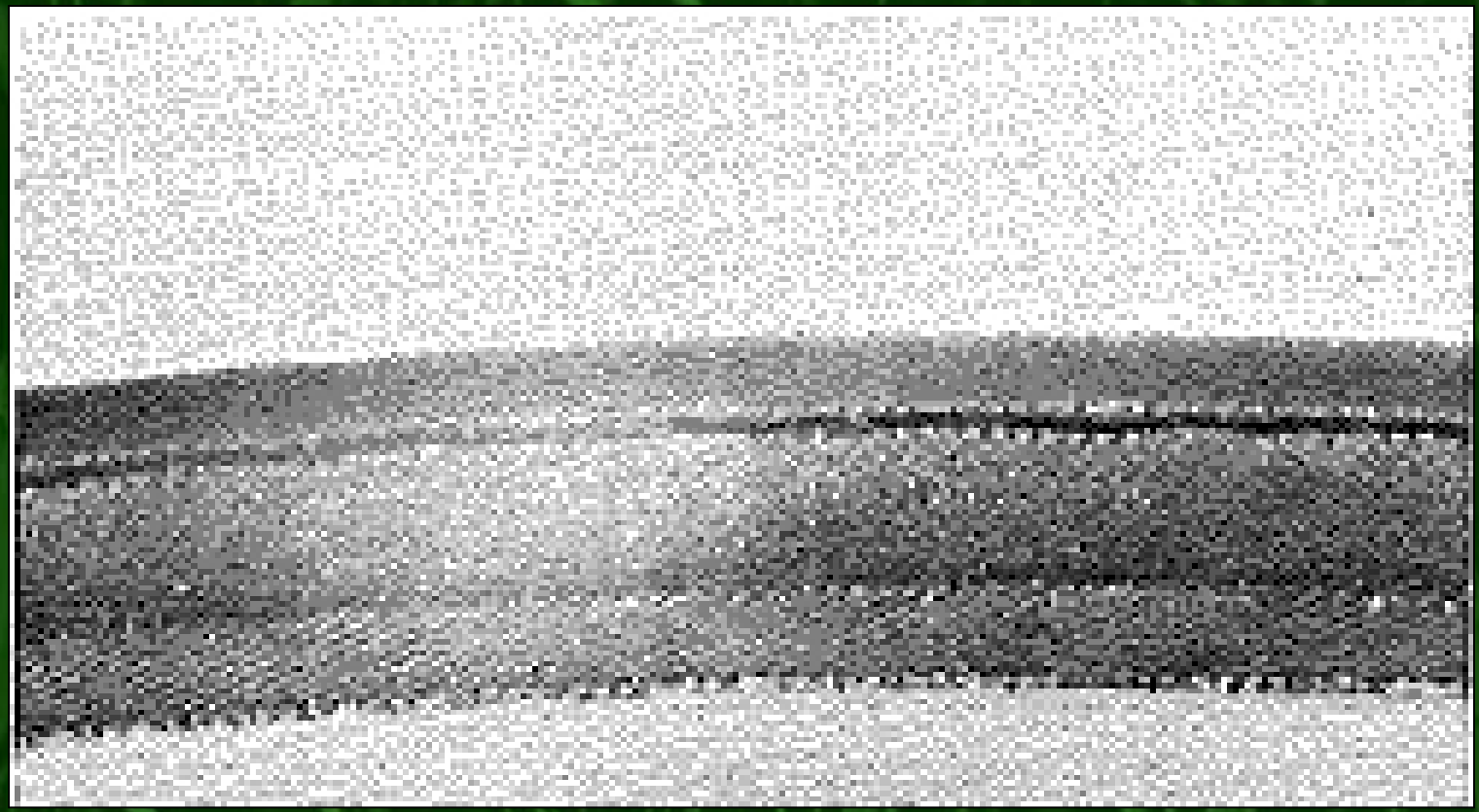
UPDATE

Normal Wear



The belt should have even wear
and no shiny or glazing

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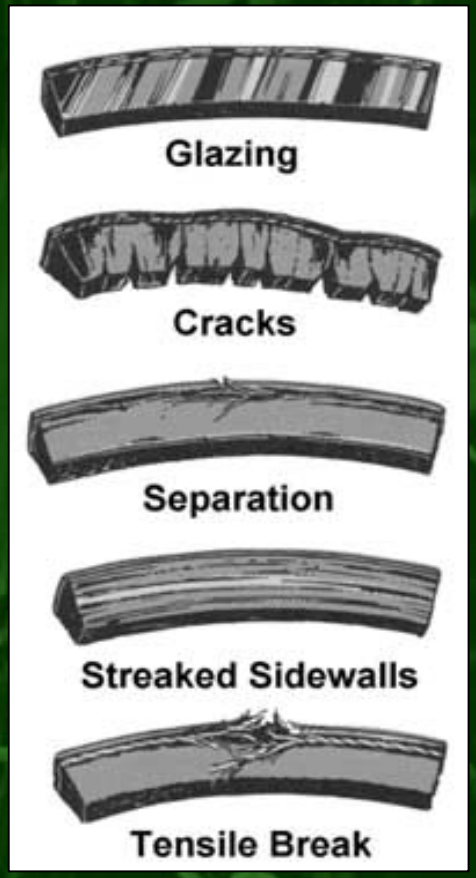
UPDATE

Types of Wear



- Glazing - belt too lose
- Deep cracks - radius to small
- Small cracks - belt hardened
- Separation - oil
- Streaked sidewalls - dirty pulley
- Tensile break - tension too high, belt pried onto pulley or foreign object damage

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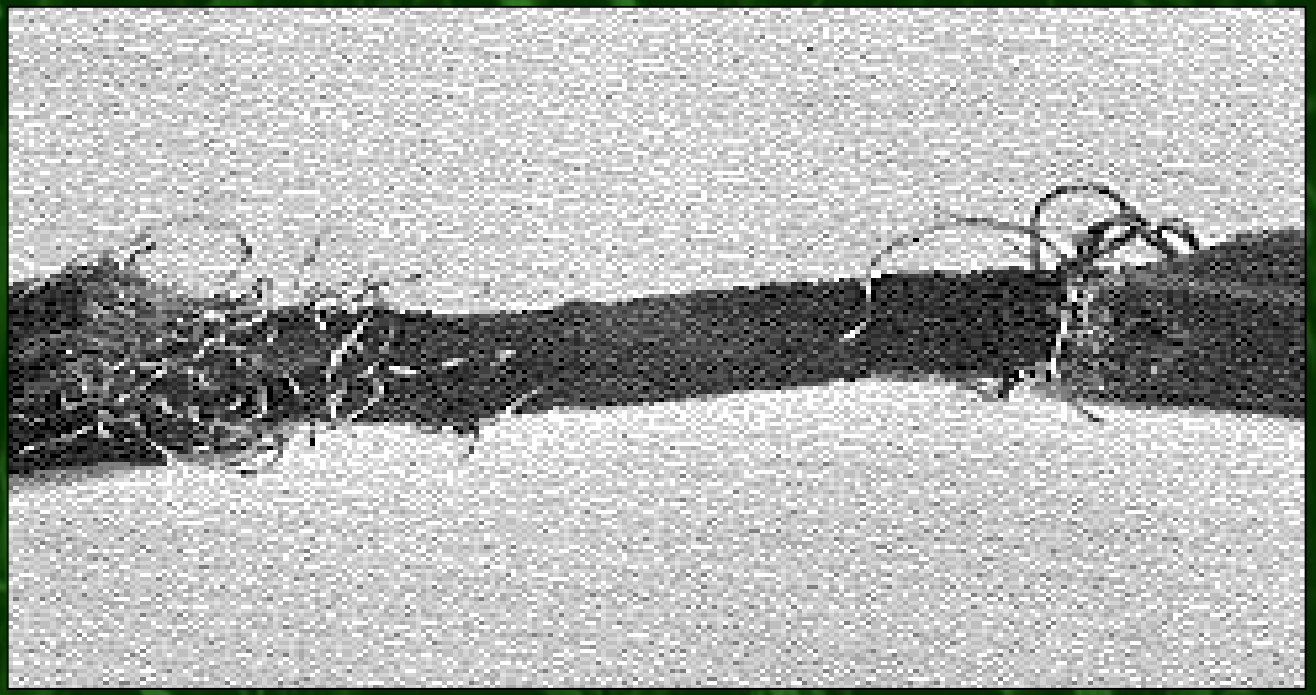
UPDATE

Shock Load



- Impact load (Blade impacts #1 cause)
- Rough PTO engagement

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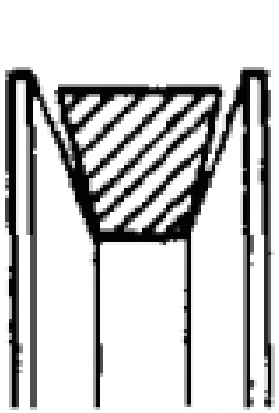
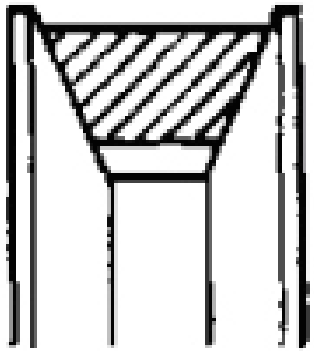
UPDATE

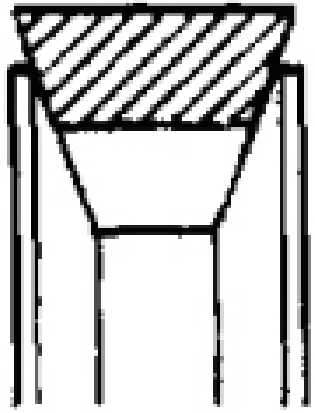
Belt/Pulley Width



TOO WIDE



CORRECT



TOO NARROW

- Pulley opening up or wore out
- Wrong belt
- Wrong pulley

- Wrong belt
- Wrong pulley

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UPDATE

Engine Warranty

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MTD Dealer Responsibilities

UPDATE

- Check for proper lubrication and level. Lack of lubrication or improper lubrication will not be warranted
- If carburetor has problems, use the Carburetor Warranty Check List
- A bent or damaged crankshaft is not warrantable
- Look for signs of over-use or abuse. Engines that fail because of over use or abuse are not warrantable. They are to be repaired or replaced at the customer's expense
- If the problem is internal, such as a piston rod failure, the engine is to be replaced under the engine like-kind exchange policy. Do not short block warranty failures

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UPDATE

MTD Dealer Responsibilities *Cont.*

- If an engine/part is replaced under warranty, the original engine/part may be called-back for evaluation by MTD Vendor Recovery Dept. If so, please return the engine completely assembled. Unassembled units may either be returned without inspection or denied due to failure not able to be determined
- Warranty Claims will be denied, returned, or adjusted if the returned engine does not meet MTD's replacement criteria
- Dealers **are encouraged to open engines** for inspection, allowing them to identify a problem within the engine
- Beyond warranty, dealers are free to repair engines at customer expense
- If the dealer has questions regarding engine replacement, they should call MTD Service using the dealer only line before proceeding

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UPDATE

Carburetor Check List

- MUST be completed BEFORE replacing a carburetor under warranty
- It MUST be sent in with the carburetor or the claim WILL be denied
- The check list is a useful diagnostic tool to help determine what is wrong with the engine

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UPDATE

HINT!

Warrantable failures usually show up in the first couple of hours of use

Failures after the first season are almost never warrantable

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UPDATE

Wonder why your engine claims are not getting paid?

Here are some examples of actual engine claims that are **not warrantable**

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UPDATE

Claim #1

Purchase date	05/27/2009
Failure Date	06/15/2009
Model Number	11A-41MB006
Engine	1P65M0
Probable cause (as stated by the dealer)	Unit will not run off choke.
Work performed	Checked spark, good. Checked fuel line, good. Try to blow through inlet to carb, very hard. Inlet not letting gas by. Float was good. Seat was installed wrong. Remove and replace carb. R&R air filter check oil. Test run.

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UPDATE

Claim #1

Not Warranty

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Claim #2

Purchase date	None
Failure Date	08/01/2009
Model Number	21C-64M1011
Engine	170-T0
Probable cause (as stated by the dealer)	Unit surging needs new carb
Work performed	Installed new carb

UPDATE

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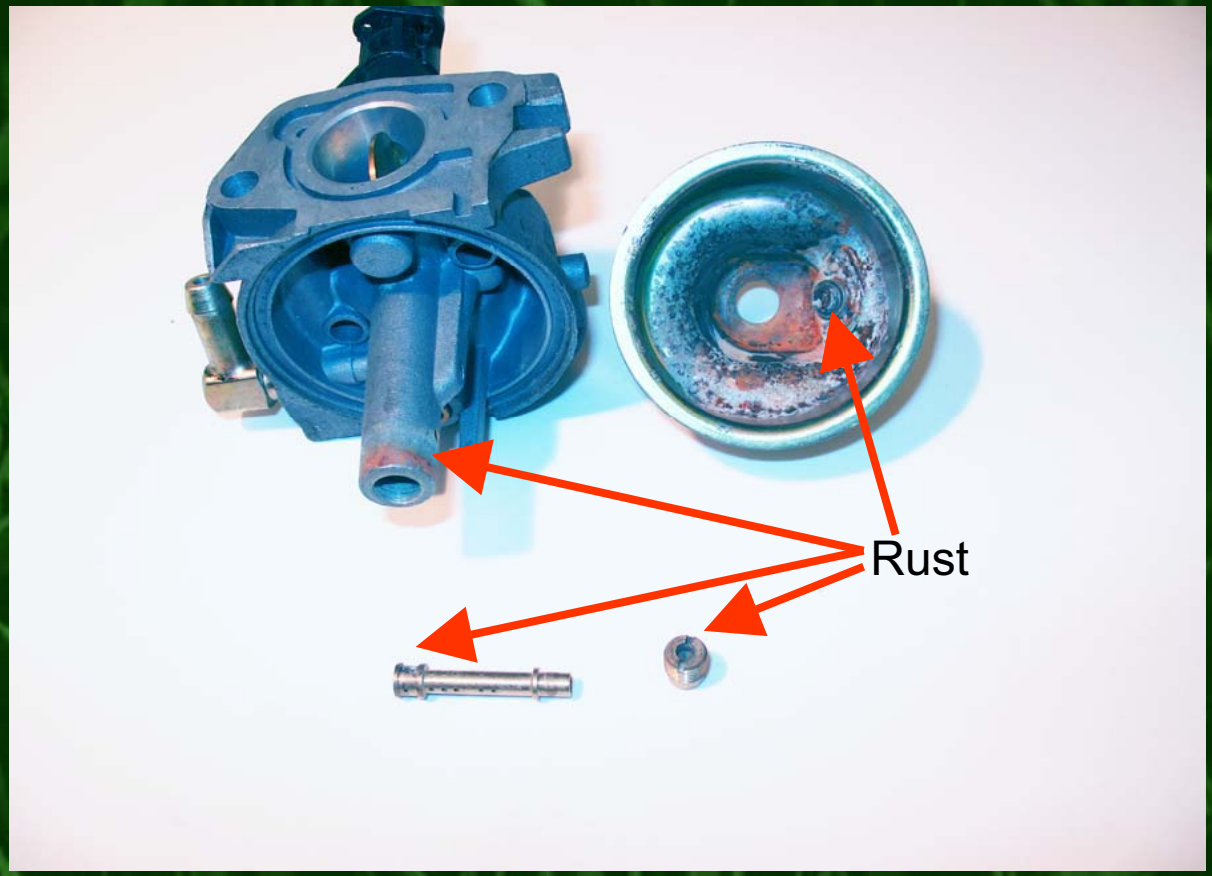
UPDATE

Claim #2



Not Warranty

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UPDATE

Claim #3

Purchase date	11/15/2008
Failure Date	09/26/2009
Model Number	11A-41MY229
Engine	1P65MC
Probable cause (as stated by the dealer)	Carburetor failure. Machine starts and it turns off.
Work performed	Replaced carburetor under warranty. Unit is working properly.

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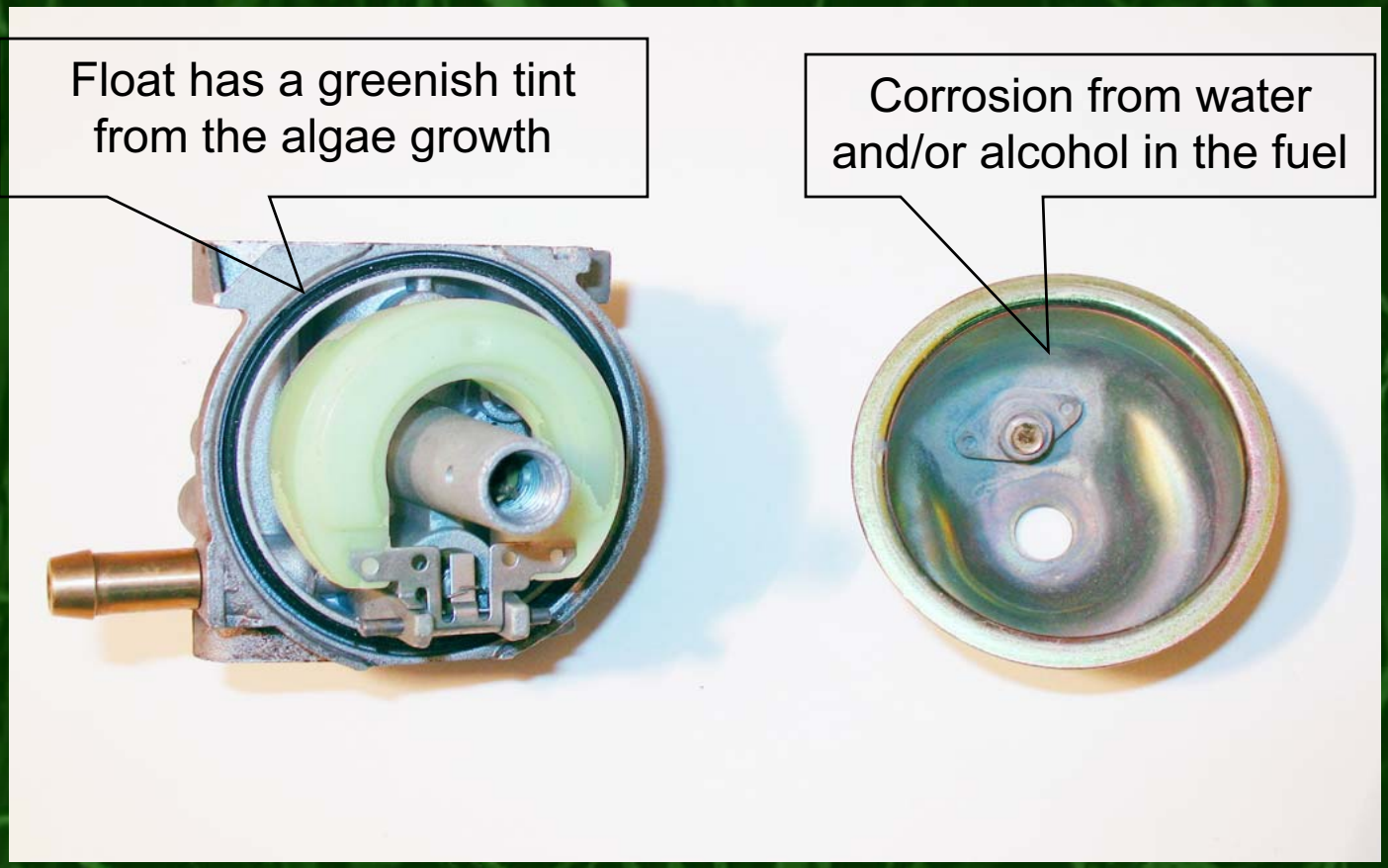
UPDATE

Claim #3



Not Warranty

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UPDATE

Claim #4

Purchase date	06/23/2008
Failure Date	07/23/2009
Model Number	11A-08MA029
Engine	1P61P0
Probable cause (as stated by the dealer)	Carb stop running/gas floods
Work performed	Replaced carb

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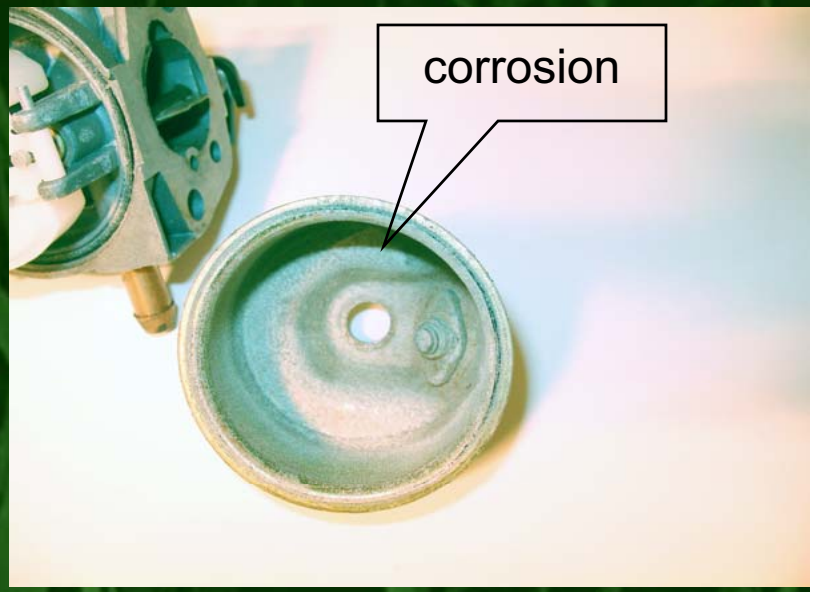
UPDATE

Claim #4



Not Warranty

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UPDATE

Claim #5

Purchase date	12/12/2008
Failure Date	09/11/2009
Model Number	11A-41MY229
Engine	1P65MC
Probable cause (as stated by the dealer)	carburetor
Work performed	WE REPLACE GASKET SET BECAUSE GASKET THAT GOES BETWEEN CARBURATOR WAS BROKEN DID IMPROVE ON MOTOR PERFERMANCE , REPLACE ROLL OVER VALVE AND CARBON CANISTER , MOTOR RUN BETTER REPLACE CARBURATOR AUTHORISED BY MTD TECH

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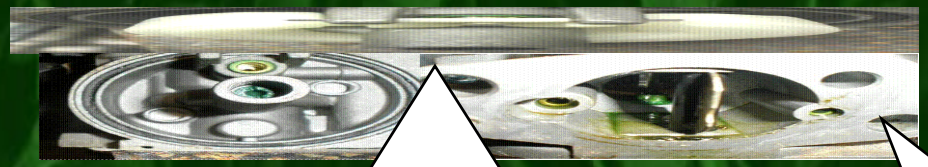
UPDATE

Claim #5

GREEN CORROSION



Jet is completed plugged from corrosion

Green varnish

NOTE: Having an authorization from a MTD Tech does not guarantee the claim will be paid. If the failed parts don't match what was told to the MTD Tech, the claim will be denied. If the failed parts are obviously not warranty failures, the claim will be denied.

Not Warranty

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UPDATE

Claim #6

Purchase date	08/25/2008
Failure Date	08/23/2008
Model Number	11A-50MB031
Engine	1P65M0
Probable cause (as stated by the dealer)	unit had no compression
Work performed	check out unit would not start checked for fire & unit firing check for fuel & unit had fire check compression & had none but piston is moving in cyl removed head to check head gasket & was ok called tech & was instructed to replace engine ordered & installed new engine add oil run test & fill out warranty claim

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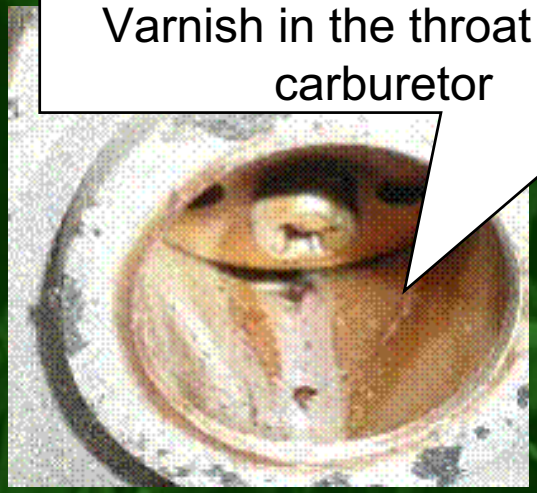
UPDATE

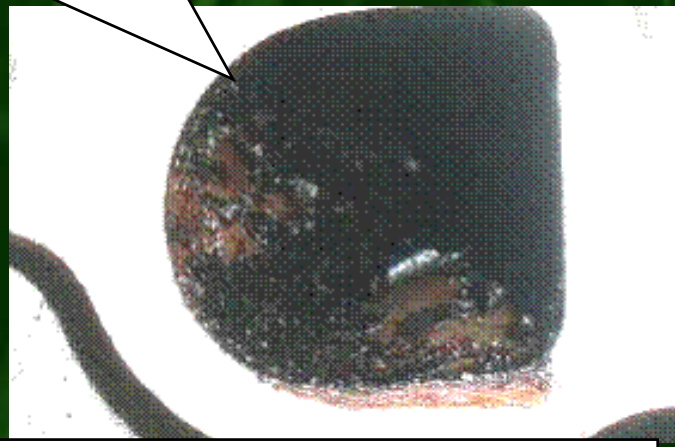
Claim #6

Engine was run with bad fuel

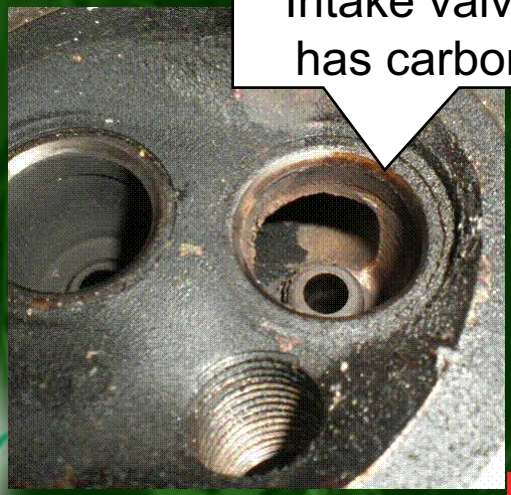
Varnish in the throat of the carburetor



Intake runner is completely carboned up



Intake valve opening has carbon build up



Carbon build up on intake valve

Not Warranty

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Claim #7

Purchase date	09/30/2008
Failure Date	06/09/2009
Model Number	12A-18MC056
Engine	1P70FUA
Probable cause (as stated by the dealer)	Engine leaks fuel at the carburetor. Found carburetor was flooding and fuel was in the crankcase. Engine oil was diluted. Found no dirt in the fuel. Float level was correct. Replace carburetor as per Cub Tech.
Work performed	Replace carburetor and air filter. Test engine operation.

UPDATE

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UPDATE

Claim #7

Not warranty!

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Engine Replacement Warranty Process
MTD Service Centers

UPDATE

1. The dealer must make a thorough inspection using specific diagnostic techniques to determine whether the engine must be replaced
2. The Central Distributor will gather the claim number from the dealer and attach it to the replacement order. Each Central is responsible for maintaining an available supply of engines to be used for warranty repairs
3. Engines will be shipped immediately to maintain service level expectations

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Engine Replacement Warranty Process
MTD Service Centers

UPDATE

4. The dealer MUST submit a copy of the properly completed warranty claim form to the Central Distributor. Each Central will need this information so that the Customer Service Center can create a replenishment order. Any copy of a claim form received without COMPLETE information will be returned to the Central Distributor without a re-order placed

5. The dealer will submit the properly completed warranty claim form to MTD per the standard warranty procedure. Claims received with incomplete information will be returned unpaid

6. ALL defective engines must be returned to MTD Evaluation Center accompanied with a copy of the warranty claim. Note—Dealer should use the same carton for return of defective engine

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Model and Serial Number

UPDATE

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UPDATE

Service Kits, Advisories, and Supplements

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UPDATE

What's the Difference ?

∗Service Kits

Generally involve parts that will be sent as a complete package with instructions.

∗Service Advisories

Generally involve no parts, parts that a dealer would typically stock, or parts that are readily available from a reputable local source.

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UPDATE

June 14, 2004

Subject: Service Advisory/ Service Kit Guidelines

It has been seen that the interpretation of the application of service kits has been a point of confusion for the field service network. This has lead to unnecessary and possible misuse of service kits as a warranty repair. The use of service kits to convey information that could have been better communicated with a service advisory has perpetuated the problem. Service kits have been issued for both mandatory repairs (warranty) and normal parts replacement, like parts consolidation and sku reduction.

To clarify communication between MTD Service, MTD Central Distributors and the Service Dealer Network the following Service Advisory/Service Kit Guidelines are in effect immediately. These Guidelines, standardized document formats and our commitment to improve instructional detail will provide consistent application and clarity of service advisories and kits.

Service Kits - Will be developed for:

1. Replacements for parts that are No-Longer-Available
2. Consolidation of like service parts (SKU count reduction)
3. Service parts count reduction (i.e. stocking a sub-assembly in lieu of individual components)
4. Safety related upgrades
5. Production issues
6. Performance upgrades

Service kit instructional documents developed for Items 1, 2 and 3 above will not be distributed to the Central Distributors and therefore the service dealer network since these type service kits will automatically be substituted for those parts crossed to the service kits. However, new assemblies or sub-assemblies not listed in IPL's will be distributed to the Central Distributors for the service network.

Service kits may be applicable to more than one of the items listed above. If a service kit is applicable to any one of the service advisory justifications listed below it will be defined and incorporated/attached in that service advisory.

Service Advisories - Will be issued when justified by: (Central Distributors to re-distribute to area service dealers)

1. Safety related issues
2. Mandatory and Fix-as-Fail repairs/upgrades
3. Issues that impact product servicing
4. Product operational issues
5. Service dealer notification of a special nature
6. Temporary parts availability issues

When a service advisory is deemed necessary to address an above listed justification it will define the following:

1. Product line affected
2. Models affected
3. Serial number range affected (manufactured date range)
4. Problem and Solution/Corrective Action
5. Applicable service kit (if any, will be attached to the service advisory for quick reference)
6. If repairs are mandatory or fix-as-fail
7. Warranty filing information (if applicable) i.e. time allowance, original failed part, special filing requirements etc.

Not all service advisories will reflect a service kit and not all service kits will be covered by a service advisory.

If you have any questions regarding these Guidelines please contact me at "edward.maslach@mtdproducts.com".

Ed Maslach
Serviceability Planner

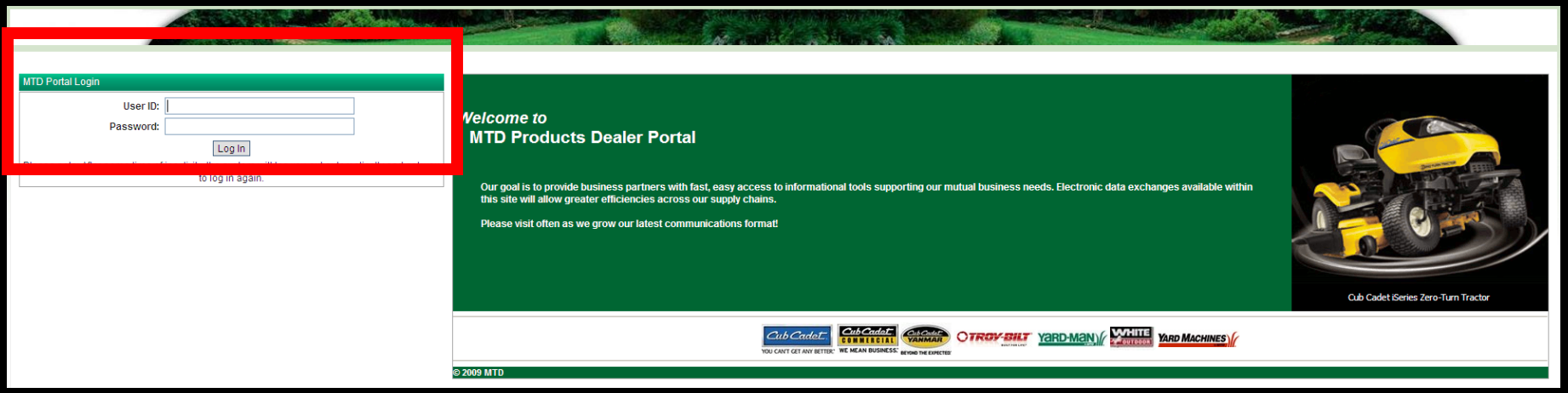
The Dealer Portal

How to use the Dealer Portal –
online interactive training

http://service.mtdproducts.com/massdealersupport

The Dealer Portal

Dealer Portal Login at: *https://www.mtdtech.com*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User ID:
Password:
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to log in again.
Welcome to
MTD Products Dealer Portal
Our goal is to provide business partners with fast, easy access to informational tools supporting our mutual business needs. Electronic data exchanges available within this site will allow greater efficiencies across our supply chains.
Please visit often as we grow our latest communications format!
Cub Cadet iSeries Zero-Turn Tractor
Cub Cadet
YOU CAN'T GET ANY BETTER
Cub Cadet COMMERCIAL
WE MEAN BUSINESS
Cub Cadet YANMAR
BEYOND THE EXPECTED
TROY-BILT
YARD-MAN
WHITE OUTDOOR
YARD MACHINES
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